

62
5087
22

ENGINE STORAGE

TN
122
S7A3
no. 22

South



Australia.

Physical &
Applied Sci.
Engg.

A REVIEW

Engineering

OF

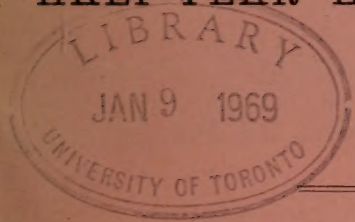
MINING OPERATIONS

IN THE

STATE OF SOUTH AUSTRALIA

DURING THE

HALF-YEAR ENDED JUNE 30th, 1915.



No. 22. DO NOT REMOVE
FROM THIS ROOM

Compiled by LIONEL C. E. GEE, S.M., Chief Registrar and Recorder, Department of Mines

ISSUED UNDER THE AUTHORITY OF THE

HONORABLE R. P. BLUNDELL, M.P.,

Minister of Mines,

By F. C. WARD, J.P., *Secretary for Mines.*

DEPARTMENT OF GEOLOGICAL SCIENCES,
UNIVERSITY OF TORONTO
Adelaide:

R. E. E. ROGERS, GOVERNMENT PRINTER, NORTH TERRACE.

1915.

THE
LIBRARY
OF THE
MUSEUM
OF
ART AND
ARCHAEOLOGY
OF THE
UNIVERSITY OF
CAMBRIDGE

2011.10.17

South



Australia.

A REVIEW

OF

MINING OPERATIONS

ERRATUM.—On page 17, "GLENLOTH BATTERY AND CYANIDE WORKS," column "Weight of Ore," for 227 tons 9cwts. read 2,827 tons 9cwts.

Compiled by LIONEL C. E. GEE, S.M., Chief Registrar and Recorder, Department of Mines

ISSUED UNDER THE AUTHORITY OF THE

HONORABLE R. P. BLUNDELL, M.P.,

Minister of Mines,

By F. C. WARD, J.P., *Secretary for Mines.*

Adelaide :

R. E. E. ROGERS, GOVERNMENT PRINTER, NORTH TERRACE.

1915.

...the ...
...the ...
...the ...
...the ...
...the ...
...the ...

South



Australia.

A REVIEW

OF

MINING OPERATIONS

IN THE

STATE OF SOUTH AUSTRALIA

DURING THE

HALF-YEAR ENDED JUNE 30th, 1915.

No. 22.

Compiled by LIONEL C. E. GEE, S.M., Chief Registrar and Recorder, Department of Mines

ISSUED UNDER THE AUTHORITY OF THE

HONORABLE R. P. BLUNDELL, M.P.,

Minister of Mines,

By F. C. WARD, J.P., *Secretary for Mines.*

Adelaide :

R. E. E. ROGERS, GOVERNMENT PRINTER, NORTH TERRACE.

1915.

Miners' Rights and Privileges thereunder.

A miner's right is obtainable at the Department of Mines, Adelaide, also at the issuing stations in the various mining districts, at a cost of 5s.

A miner's right is in force for one year from the date of issue, and may be renewed at any time during its currency for another term of one year on payment of 5s.

The holder of a miner's right is authorised to prospect on any mineral lands for any metal, mineral, coal, or oil, and to peg out (of the prescribed shape and dimensions) gold, mineral, coal, and oil claims, and also leases of a like nature.

AREAS AND WORKING CONDITIONS.

GOLD LEASES—Maximum area, 20 acres; working conditions, one man to every five acres.

MINERAL LEASES—40 acres; one man to every 10 acres.

MISCELLANEOUS LEASES—

Salt	640 acres; special conditions.
Gypsum	640 “ “
Mining Works.....	10 “ one man.
COAL OR OIL LEASES	640 “ one man to every 40 acres.
GOLD DREDGING LEASES	200 “ special conditions.
MINERAL CLAIMS	40 “
GOLD CLAIMS.....	30ft. x 30ft., alluvial; 100ft. x 600ft., reef.

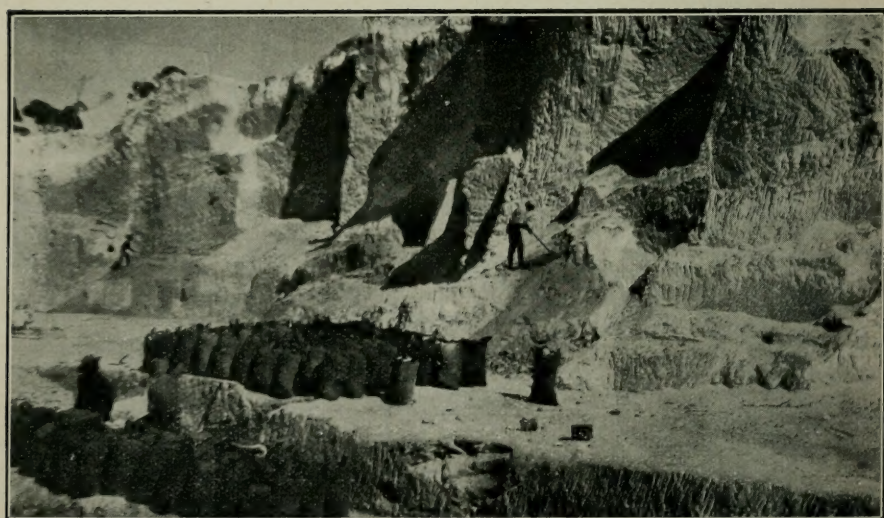
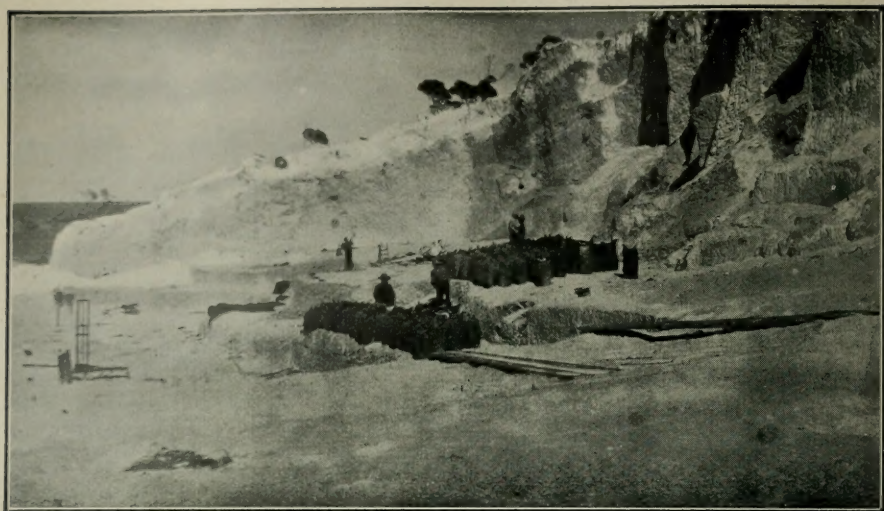
Gold claims must be constantly worked—one man for each claim—and mineral claimholders must employ two men for each claim. Amalgamation of either gold or mineral claims reduces the labor conditions by one-half.

Gold, mineral, coal, and oil leases are granted for a term of 42 years—the two former at a rental of 1s. per acre per annum and a royalty of 6d. in the pound on net profits, the latter at a rental of 6d. per acre per annum until coal or oil is found in payable quantities, when 1s. per acre is payable and a royalty of 6d. in the pound on the net profits.

The Minister may permit, for the concentration of labor, of the amalgamation of not more than four adjoining gold or mineral leases.

Any number of gold, mineral, coal, or oil leases may be held by one person.

Licences to search for twelve months for precious stones, mineral phosphates, oil, rare metals, minerals, and earths are issued on specific mineral lands, not exceeding five square miles in area for one person, a fee of 20s. being charged for each square mile or portion thereof. These licences give a preferential right to a lease over a portion of the area, as prescribed.



Gypsum Workings, Eastern Side of Lake Fowler.

PREFACE.

THE average price of Standard Copper for the six months, £71 1s. 1d. per ton, has given an impetus to Copper Mining, and has enabled the Wallaroo and Moonta Company to increase the wages of their employés.

Satisfactory returns continue from Tarcoola, and the fact that the railway is now completed to that place will remove many of the disabilities under which the district has labored ever since its discovery.

Steady progress is being made in the North-Eastern Goldfields.

In consequence of the war, the production of Gypsum is increasing.

A find of precious Opal has been made at Stuart's Range, in the Far North.

LIONEL C. E. GEE,

Chief Registrar of Mines.

August 24th, 1915.

INDEX.

	PAGE.		PAGE.
Accidents, Mines and Quarries	35	Manganese, Pernatty	9
Alma and Victoria.....	12	Maltese Cross, Ochre	51
Alunite	14	Marjorie C. M.	56
Assays	35	Medora and Mount Grainger	13
Bingo C. M.—Log of bores	14, 27-31	Men employed	5
Black Eagle	41	McCallum's Show.....	51
Blinman	10, 40	Miltalie	58
Blumberg	13	Mining Operations for Half-year.....	5
Bores, Logs of.....	14, 22-31	Minerals—Approx. return since 1840..	36
Boring Operations, Poona and Matta- para	19	Mount Coffin C. M.	43
“ Calcookra and Mil- talie.....	20	Mount Gunson C. M.	11
Buttamu Government well.....	49	Mount Monster G. M.—Logs of bore..	14, 22-26
Cahill Bros.....	13	Mount Malvern S. L.	13, 45
Clayton Evan G. M.....	53	Mount Rose C. M.	8
Connor, J. D.	6	Mount Torrens Government Plant....	16
Copper—Low grade deposits, Utilisa- tion of	6	Myrtle G. M.	50
Copper, Prices of	35	Myrtle Extended	51
Copper Queen.....	42	New Colorado Pros. Synd.	13
Cowell Consolidated S. L.	58	New Milo G. M.	13, 54
Commonwealth G. M.	53	New Mount Lyell Consols C. M.—Log of bores.....	14, 27-31
Crystal Salt Co.	14	Nichols' Nob C. M.	41
Crushing and Cyanide Plants	16	Nitlibury C. M.	41
Decennial Returns.....	36	Nuccaleena C. M.....	39
Deloraine G. M.	12, 17	Oil, Search licences for	14
Diamond Jubilee C. M.....	43	“ Boring for	14
Discovery of Opal	13	“ Bonus for discovery of	15
Dorris Fabian.....	44	Olivaster S. L.	13
Dustholes G. M.	50	Opal, Discovery of	13
Earea Dam	12	Paul's Consolidated C. M.	7, 44
Elsie Adair	42	Pernatty, Copper	8
Federal G. M.	47	“ Manganese	9
Flinders Copper Co.	10	Petersburg Government Plant.....	16
General Notes	6	Poonana	13, 58
Gibraltar Pyrite Mine	48	Prospecting Parties	6
Glenloth Government Plant.....	17	Prospecting Vote	6
Golden Junction	48	Radium Extraction Co.	14
Golden Record	56	Radium Hill	14
Great Eastern G. M.	54	Reports by Inspector	9
Gypsum	14	Return—Approximate Mineral Produc- tion since 1840	36
Hamley C. M.....	11	Subsidies	32
Hidden Secret G. M.	13	Sugarloaf.....	57
Homeward Bound G. M.	13, 53	Tarcoola	11
Hummocky Point Jetty	14	“ Blocks	12
Inspector of Mines, Report by	37	“ Government Plant	16
Iron ore	14	Thunder Queen	55
Ivy Queen C. M.	41	Ulooloo	38
Junction G. M.....	50	Utica C. M.	44
Kanmantoo C. M.	48	Virginia G. M.	54
Kirkeek's Treasure G. M.	12, 17	Warra Warra C. M.	11
Lake Labyrinth	13	Wadnaminga	17
Lively's Claim	55	West Burra C. M.	37
Logs of Bores.....	14, 22-31	Wilgena Enterprise G. M.	12
Lux G. and C. M.	12	Williams' S. L. Show	40
		Yudnamutana	10

Mining Operations during the Half-year ended June 30th, 1915.

AREA AT PRESENT HELD UNDER MINING ACTS (JUNE 30TH, 1915).

Nature of Holding.	Number.	Area.
Mineral leases	317	14,915 acres
Gold leases	100	1,863 "
Gold dredging leases	—	— "
Miscellaneous leases	64	15,952 "
Coal and oil leases.....	4	1,440 "
Mineral claims	384	14,684 "
Occupation licences	209	104½ "
Search licences	353	947,200 "
Coal and oil claims	26	16,640 "
Gold claims	11	22 "
Total holdings	1,468	1,012,820½ acres

REGISTERED FROM JANUARY 1ST, 1915, TO JUNE 30TH, 1915.

Mineral leases	19	721 acres
Gold leases	15	255 "
Gold dredging leases	—	— "
Miscellaneous leases	2	640 "
Coal and oil leases.....	4	1,440 "
Mineral claims	150	5,028 "
Coal and oil claims	17	10,880 "
Gold claims	10	20 "
Occupation licences	11	5½ "
Search licences	161	426,240 "
Miners' rights	772	—
Total	1,161	445,229½ acres

MEN EMPLOYED.

Estimated number of men employed in mining and mineral works, June 30th, 1915:—

Copper	3,000
Gold	375
Salt	375
Silver-lead	25
Other minerals.....	330
Smelting works, Port Pirie	1,100
Raising flux, etc., in connection therewith	400
Total.....	5,605

GENERAL NOTES.

During the six months Government assistance from the Prospecting Vote has been given to the following :—

Beltana Rapid Ore Treatment Syndicate (copper).
 Cowell Consolidated Silver and Copper Mine.
 Great Eastern Gold Syndicate, Wadnaminga.
 Hamley Copper Mining Co.
 Kirkeek's Treasure Gold Mine (J. Heithersay).
 Nuccaleena Copper Mine (Hunter Bros.).
 Mount Malvern Silver-Lead Mining Co.
 Olivaster Silver-Lead Mining Co.
 Tumby Bay Copper Mining Co.
 Utica Copper Mining Co.
 Dorris Fabian Copper Mine (A. Davis).
 Myrtle Gold Mining Co. (Dustholes, Mount Grainger).
 Golden Junction Gold Mining Co. (Mount Grainger).

During the past six months prospecting work has been carried on continuously with assistance from the Government by parties operating in widely distant parts of the State.

The localities at which the various parties have been prospecting are Northern Flinders Range (two parties), Teetulpa (two parties), Mannahill, Uooloo, and Blackfellow's Creek.

While the work has not yet led to any material discoveries, it is recognised that the scope for such work is wide and that at any time a successful find may be reported from areas that have been approved for investigation.

The work of prospecting needs both skill and patience, and it is not reasonable to anticipate immediate returns. If the work is thoroughly and systematically carried out it has a real value, even though results be disappointing.

Utilisation of Low-grade Copper Deposits.—The Government having decided to make a systematic attempt to initiate a means of turning to account the relatively low-grade copper deposits of the State by hydro-metallurgical methods, the Hon. Minister of Mines approached the University, and, upon the recommendation of that body, appointed to the position of Government Metallurgist, for two years, Mr. J. D. Connor, B.Sc., who graduated in 1902 and has held important metallurgical positions in various parts of Australia since that date.

Mr. Connor will receive a commission to visit and report upon the most modern hydro-metallurgical plants now in operation in America. After a short tour he will erect a small experimental plant in South Australia, and will carry out a series of tests on the copper ores of the State. The direct aim of this experimental work will be the drawing up of working schemes wherever practicable for the treatment of the ores that have been tested. The results of all work done, and the details of any scheme that may be propounded, will be published.

It is considered that even if only one successful plant can be put into operation the State will reap an ample reward for the expenditure involved.

The experimental work that is to be carried out is absolutely essential for the proper design of the larger working plants, which, to be economically successful, must be situated on the mines. In providing means whereby individual mine owners

or companies may obtain authoritative reports on the feasibility of treating their copper ore by leaching processes, the Minister feels that the Department of Mines will be offering the most valuable form of assistance to the industry. Should the experimental work be successful it is hoped that some of the copper mines which are now lying idle, or being worked on a restricted scale, will become important contributors to the annual output of copper. The unavoidably wasteful methods of mining that are now being followed on some mines, whence only the richest ore is being shipped to the smelter, should give place to more economical treatment, and the existing rejection of the lower grade ore calls for improved means of utilising to the full our mineral resources.

During the next two years, under Mr. Connor's direction, the testing of a number of typical ores will be effected, and the work may be reasonably expected to benefit the State by inducing a general increase of mining activity. At the outset the Minister wishes to make it clear that during the limited time of Mr. Connor's appointment, it will be necessary for the department to weigh carefully the claims of various mines for consideration. Every attempt will be made to experiment upon as wide a range of copper-bearing ore as is possible in the time, and the selection of the mines from which the ore to be tested is to be obtained will, therefore, depend very largely upon the results of the investigations that will be made for this purpose. It goes without saying that preference will be given to properties sufficiently developed to show promise of containing such a tonnage of ore as may justify the erection of a plant on the mine if a satisfactory method of treatment can be indicated.

Paull's Consolidated Mine (Note by Government Geologist).—The only recent work that has been carried out at this mine is the development and stoping of a block of ore to the E. of the main shaft, and between the 60ft. and 120ft. levels.

This work has been entirely restricted to the footwall side of the formation, which is known to carry copper over a considerably greater width. While this method of working is necessitated by present circumstances, and gives the best immediate return to the owners, it is desirable that an effort be made to broaden the basis of operations in such a manner as to realise all available assets.

It is not conducive to ultimate economy to restrict operations to the highest grade ore if a practicable means of dealing with a lower grade product can be devised.

The lode has been traced along an E.W. strike throughout the property, and a number of openings, most of which are small and shallow, have afforded exposures of the lode and outcrop for a length of about 700yds. The ore is oxidised at all points where it has been exposed, with the exception of the deepest main shaft workings, which penetrated below water level. The larger shoots in the principal workings appear to be formed where groups of joints cross the formation. The formation as a whole is a copper-impregnated zone, which conforms in both strike and dip with the country rock—the upper beds of the Cambrian tillite.

During the progress of past operations on the mine several thousand tons of material broken from within the limits of the formation have accumulated. Much of this material has been raised to the surface, and some has passed through a concentrating mill. The balance has been used for filling the stopes. All such material should be considered as being possibly worth re-treatment, since the distinction between ore and waste has been an arbitrary one fixed at a high copper percentage, owing to the conditions of working, treatment, and transport. Granted an improvement in method and a reduction in the costs of treatment, it is certainly worth while taking pains to sample all the rejected material accurately.

Mount Rose Mine (Note by Government Geologist).—It is proposed to re-treat the lower grade ore which accumulated during former mining operations on this property. The mine has produced in the past 165 tons 11cwt. 17lbs. of copper from 548 tons 8cwt. 1qr. of ore shipped. This total includes 8cwt. of copper bottoms recovered from the reverberatory furnace which was in commission for a very brief period.

The principal portion of the output was derived from several pipes of ore in the vicinity of the main shaft, near the S. corner of the property. The workings at this place are disposed in an E.N.E.-W.S.W. direction over an area measuring 5 chains in length by a chain in width. Within this area there have been proved a number of pipe-like deposits of ore, the relationship between which cannot now be properly determined owing to the presence of water in some workings and the inaccessibility of others. From the description of the workings it appears that the ore bodies do not, as a whole, exhibit the tabular character of normal veins. The main shaft is 200ft. deep, and is said to have passed through malachite into chalcocite and black oxide. Workings from a shaft sunk at a later period at a point 190ft. to the E.N.E. of the main shaft penetrated to a depth of 103ft., and proved the existence of dense copper-bearing iron pyrites.

Veinlets of siliceous ore carrying chalcocite and malachite have recently been opened up at points 30ft. W. of the pyrites shaft and 280ft. N. of the main shaft.

On flat ground to the W.N.W. of the main shaft and at a distance of 8 to 9 chains some work has been done on a belt of calcareous and graphitic slate which contains veinlets, splashes, and impregnations of copper ores. Malachite, chalcocite, and cuprite are the copper-bearing minerals present. One shaft has been sunk to water level—58ft. from the surface—but none of the other workings appear to exceed 12ft. in depth. The waste material from these excavations has been disintegrated by weathering, and a considerable proportion of the copper content is consequently now recoverable by concentration without crushing.

The Pernatty Company has recently furnished the following information:—Good progress has been made with the erection of the plant, which will be located on the side of the hill, on the edge of the lake, whither the ore will be hauled over a tramline which has been laid out to the copper deposits. The last section of the plant is expected from Melbourne shortly, and the process should soon be in full working order. The treatment of the ore will be by what is known as the chloridising process. It is now being used extensively in other parts of the world. It is cheap and effective, and was proved amenable to this ore in the treatment of a bulk parcel at Ballarat. The present plant will treat 20 tons daily. The ore will pass through a rock-breaker, then through rolls to be crushed, then screened and roasted in heaps, with the addition of sulphur and salt, when it will reach a form soluble in water. Afterwards it will be tipped into leaching vats containing salt water pumped from the lake. The water from the lake will act as a solvent, about 95 per cent. of the copper contents of the ore being dissolved out. Finally the solution will pass through vats containing scrap iron, and the copper will be precipitated. The copper precipitates will be shipped to smelters to be turned into blister copper. It is the intention of the company, as soon as the present plant is running, to begin the erection of further units, with a view to ultimately provide a plant with a capacity of 200 tons of ore a day. The enlarged plant is expected to be in operation in about 12 months. An Edward roasting furnace will then take the place of the heap roasting, and there will be no handling of the ore from the time it leaves the lake in trucks until it comes out as precipitates of copper.

The limitation of the deposits has still to be demonstrated, the company not yet having proved the extent of the ore either laterally or vertically. Work done during the last six months has, however, clearly demonstrated that the deposits are much more extensive than was at first estimated. When Mr. W. E. Wainwright inspected the property last year he calculated that 145,000 tons of 2·8 per cent. ore were in sight. The work since carried out in various parts of the blocks appears to justify the belief that there is quite double that quantity of ore now in sight of a much higher average grade than calculated by Mr. Wainwright. Beneath the bedding plane referred to by Mr. Wainwright, in making his calculation of the ore in sight, several feet of ore of about 4½ per cent. copper have been proved to exist. This was not unexpected, as Mr. Wainwright, in his report, said "The deposit requires further development, which is certain to result in augmentation of the ore reserves, and perhaps in increased grade of ore."

Not only have the developments on Pernatty Lagoon been most satisfactory, but work at the Gunyot Carbonates, three-quarters of a mile from the lake, have also been favorable. Actual results from the treatment will be awaited with interest.

The valuable and interesting reports of Messrs. Wainwright and Murdoch on this property were republished with plans and diagrams in Review No. 20.

The *Pernatty Manganese Deposits* are situated in the same locality, and the secretary of the *Australian Manganese Co.* reports that a quarry from which about 100 tons of high-grade manganese ore was raised and sold to the Broken Hill Proprietary Co., and in which about another 100 tons has been broken, has been excavated. Several holes and trial shafts have been put down; the deepest being 30ft., all in good manganese ore.

Reports by Inspector Jones on the following mines will be found as under:—

- Blinman*, copper, page 40.
- Black Eagle*, copper, page 41.
- Copper Queen*, copper, page 42.
- Commonwealth*, gold, page 53.
- Clayton Evan*, gold, page 53.
- Cowell Consolidated*, silver-lead, page 58.
- Diamond Jubilee*, copper, page 43.
- Dorris Fabian*, copper, page 44.
- Elsie Adair and adjoining blocks*, copper, page 42.
- Federal*, gold, page 47.
- Gibraltar*, pyrites, page 48.
- Golden Junction*, gold, page 48.
- Great Eastern*, gold, page 54.
- Golden Record*, gold, page 56.
- Homeward Bound*, gold, page 53.
- Junction*, gold, page 50.
- Kanmantoo*, copper, page 48.
- Lively's Claim*, gold, page 55.
- Mount Malvern*, silver-lead, page 45.
- Myrtle (Dustholes) and claims adjoining*, gold, page 50.
- Maltese Cross*, ochre, page 51.
- Marjorie*, copper, page 56.
- Mittalie*, silver-lead, page 58.

Reports by Inspector Jones—continued.

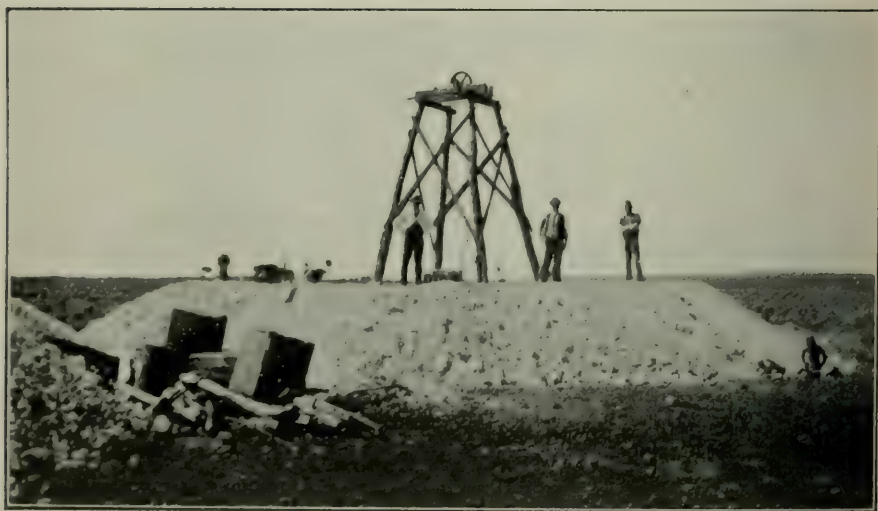
- Nuccaleena*, copper, page 39.
 - Niltibury*, copper, page 41.
 - Nicholl's Nob*, copper, page 41.
 - New Milo*, gold, page 54.
 - Paull's Consolidated*, copper, page 44.
 - Poonana*, silver-lead and copper, page 58.
 - Sugarloaf*, graphite and copper, page 57.
 - Thunder Queen*, gold, page 55.
 - Ulooloo, M. Glynn's Claim*, gold, page 38.
 - Utica*, copper, page 44.
 - Virginia*, gold, page 54.
 - West Burra*, copper, page 37.
 - William's*, silver-lead, page 40.
-

Flinders Copper Company, Limited.—The general manager (Mr. D. D. Rosewarne) has supplied the following notes :—This company is a reconstructed one of the Union Consolidated Company, and holds 18 leases of 40 acres each at Yudnamutana. The problem of the profitable working of these mines has been principally one of transit, they being 75 miles from the nearest railway point. The smelter erected some years ago has never been used, and the new board of directors, having carefully considered the whole question, determined to instal a leaching plant with electrolytic deposition on an experimental basis. During the last nine months this has been done, and the claim is made that from a 4 per cent. product copper can be made and delivered at the railway at an economic profit. If this can be carried out there is a big future for many low-grade mines in the North, and a general revival of copper mining should ensue. The general manager is now on his way to England, and it is understood that a subsidiary company will be formed to work some of the leases, and erect a plant of 120 tons per day capacity. With crushing the ore to eight-hole mesh, leaching with sulphuric, followed by direct electrolytic deposition, it is expected that the acid costs will be brought down to 3s. 6d. per ton of ore treated, and the whole process—mining, crushing, leaching, and power costs—will be brought well within 22s. 6d. per ton; this amount including transport charges to the railway. An unique feature in the leaching is that 90 per cent. of copper contents of the ore is in solution in 22 minutes, the ore being dragged or raked through the solution in that time, and Montana practice proved that there is a definite point when practically all the soluble copper is in solution and none of the iron or lime has been attacked. The obtaining of a clear solution is essential to electrolytic work. For the 120-ton plant electrical power to 600 e.h.p. will be needed, and to generate this gas producer will be used. These leases have been held in various ways for 50 years, and at many periods quantities of high-grade ore have been shipped; then from the introduction of the smelter great things were expected, but once again the transport costs were prohibitive. From American practice and experience the introduction of the direct methods in the State should be the means of a distinct revival. A gentleman who knows the copper resources of South Australia well has estimated that for every ton of 26 per cent. obtained fully three times the amount of copper of low grade ore has been thrown away. Any process that can treat 4 per cent. at a profit will be a great and permanent boon.

Blinman.—The party of men working at this well-known old copper mine have raised from old stopes and workings 28½ tons of ore containing 5 tons 18cwt. of copper.



Tarcoola Blocks Co.'s Battery.



Day Dawn Gold Mine, Tarcoola.

Hamley Copper Mine.—Work has been confined mostly to lease 1044, where a tribute party consisting of a party of an average of 14 men has been constantly employed in developmental work and mining and raising lode material. The lode material has been concentrated at the company's works, situated on lease 1045. The concentrates and slimes obtained, amounting to 115 tons, have been sold to the Wallaroo and Moonta Company. On account of water troubles the prospecting shaft on lease 1044 has been discontinued.

Mount Gunson.—General surface work has been done getting ready for the erection of machinery and plant to treat ore, also exploratory work for water supply and other necessary work.

At the *Warra Warra*, near Hergott, four men are at work, two tanks and a lime kiln have been sunk, and stoping E. and W. done in No. 2 shaft. The ore broken has been raised and dressed to $1\frac{1}{2}$ tons of rich ore ready for the market. The mine is let on tribute, but operations have been hindered owing to scarcity of explosives.

Tarcoola.—A summary of the returns from the Tarcoola Government Battery and Cyanide Plant for each six months of the last six financial years is given below.

Year.	Tons. Cwts. Qrs.	Oz. Dwts. Grs.	£ s. d.	Shillings per ton.
1909-10.....	160 15 0	460 7 17	993 0 1	123
"	26 10 0	88 5 10	319 1 5	241
	187 5 0	548 13 3	1,312 1 6	140
1910-11.....	167 10 0	163 10 1	584 0 4	69
"	155 0 0	521 0 16	1,945 2 10	252
	322 10 0	684 10 17	2,329 3 2	144 $\frac{1}{2}$
1911-12.....	106 10 0	162 17 7	433 10 6	81
"	484 0 0	777 6 14	2,750 17 3	113 $\frac{3}{4}$
	590 10 0	940 3 21	3,184 7 9	107 $\frac{1}{2}$
1912-13.....	644 5 0	942 8 6	3,324 13 7	103
"	313 0 0	264 3 2	912 19 5	58
	957 5 0	1,206 11 8	4,237 13 0	88 $\frac{1}{2}$
1913-14.....	515 0 0	1,330 11 9	4,634 15 2	180
"	316 0 0	631 19 14	2,224 18 8	140 $\frac{3}{4}$
	831 0 0	1,962 10 23	6,859 13 10	165
1914-15.....	459 17 0	552 3 14	1,932 3 7	84
"	659 10 0	645 5 6	2,158 5 9	65 $\frac{1}{2}$
	1,119 7 0	1,197 8 20	4,090 9 4	73 $\frac{1}{4}$

The grand totals, since the starting of the battery to June 30th, 1915, are 6,064 tons 12cwts. for 8,905ozs. 14dwts. 18grs., valued at £31,203 3s. or 102½s. per ton.

The grand totals of the Glenloth Government Plant (worked by the Tarcoola staff) are 2,827 tons 9cwts. for 2,106ozs. 7dwts. 10grs., valued at £7,021 4s. 10d. or 49½s. per ton.

The Tarcoola Blocks Company's Plant, from its start in May, 1901, to the suspension in March, 1912, treated 30,929 tons for 43,585ozs. of gold bullion, valued at £131,665, or 85s. per ton.

Deloraine Gold Mines, No-Liability.—Sinking and timbering of main shaft has been completed to a depth of 303ft. At 292ft., No. 3 level has been opened out and drives N. (12ft.) and S. (125ft.) have been put in. Progress has been greatly retarded by a heavy inflow of water at this depth.

The S. drive at the 192ft. level has been extended to a distance of 288ft., and the stopes at this level have supplied the bulk of the stone treated for the past six months.

The crushing plant has been duplicated with another 5-head battery (1,000lb. stamps), a new 40 H.P. Marshall engine and a Card Concentrating table, with all the necessary shafting, &c.

At *Kirkeek's Treasure Gold Mine* the sinking of the dam was completed, 100 tons of ore raised, and the laying of a pipe line from the Gap Well to the mine (about three miles) started.

The Lux Gold and Copper Mines cover the ground formerly known as the John Brown, Queen Bee, and Lux Mines. A summary of operations during the six months states—Erected complete plant for crushing ore and for recovering gold and copper from same. Stopped ore from Bayes' Shaft (Lux lease), 50 tons. Put in 20ft. crosscut from winze at 160ft. to connect with main shaft of Queen Bee lease. Took out 20 tons ore from open cut in John Brown lode. Sampled and assayed all lodes for copper and gold.

The Tarcoola Blocks Co. has, during the six months, had 69 tons of ore treated at the Tarcoola Government Battery for 206ozs. 7dwts. 4grs. of gold bullion, valued at £559 16s. 3d.

The Alma and Victoria.—For the last 12 months experimental work has been carried out on the heap of sulphide tailings at this old mine, and a considerable sum of money spent. It is now stated that the process is almost perfected and that the work of extracting the gold will soon be taken in hand.

Some work has been done at the *Wilgena Enterprise Gold Mine*, near Earea Dam, in the way of prospecting and opening up new reefs, sinking trial holes, two shafts of 21ft., and driving N. and S. on the reef. Nine tons of ore treated at the Government battery gave 9ozs. 9dwts. 6grs. of gold bullion, valued at £33 19s. 8d.

Cahill Bros. have had a good return from their *Hidden Secret Gold Mine*, near the *Lucky Hit*, Blumberg; 18 tons 14cwts. of ore treated at the Mount Torrens Government plant returned 84ozs. 1dwt. 5grs., valued at £324 13s.

New Medora and Mount Grainger.—Arrangements have been made for the working of the property on tribute for 14 months from June 1st. The tributers have raised 50 tons, and will treat the ore through the battery on the mine. The property has been recently inspected and favorably reported on by Mr. D. D. Rosewarne.

From the *New Milo*, Wadnaminga, 23 tons 5cwts. treated at the Petersburg Government plant returned 55ozs. 2dwts. 10grs., value, £185 18s. 8d.

Homeward Bound, near Mannahill, 11 tons 13cwts. gave 14ozs. 3dwts. 21grs., value, £53 5s. 10d.

Lake Labyrinth, near Tarcoola, 28 tons treated at the Tarcoola Government plant gave a return of 24ozs. 5dwts. 22grs. gold bullion, valued at £87 18s. 10d.

Returns from the secretary of the *Mount Malvern Silver Lead Mining Company* show that 300 tons of lode material have been raised; the ore is estimated to average 30 per cent. lead and 13ozs. per ton silver. Driving and crosscutting at the 214ft. and 300ft. levels has been in progress, also raising ore and other necessary work.

Olivaster Silver Lead Mine, near Rapid Bay.—The secretary reports that the new vertical shaft has been deepened and trimmed to 76ft., timbered and provided with ladder way. Crosscutting in various places, and at two levels, about 150ft.; driven on lodes about 100ft.; sunk winze 30ft.; made ore shoot, and connected with upper and lower levels; timbered where necessary and made all safe. Mine has been developed and opened up in a very systematic manner. Seventy tons of ore have been raised, and a sample passed of 20 tons is being prepared for treatment at Cockle Creek.

At *Poonana*, hundred of Mann, Franklin Harbor district, a promising lode containing copper, silver, and lead has been found (*vide* Inspector Jones's report, page 58).

A prospecting party sent out by the *New Colorado Prospecting Syndicate* to prospect some of the Far North-Western country between Lake Phillipson and the railway made a discovery of opal, which proved to be of the precious variety and similar in character to that found at White Cliffs. The locality is at Stuart's Range, about 70 miles west of Anna Creek Station.

Very little work has been done so far, the country is destitute of water, and on account of the war the market is disorganised.

During the six months new ore, totalling 77·649 tons, from the Iron Knob has been shipped from Hummocky Point jetty to the smelting works. This jetty is 2,280ft. long, and the ore is carried along it by means of a conveyor belt, whereby ships can be loaded at an average rate of 700 tons per hour; the maximum loaded is 825 tons per hour.

South Australia contains many large deposits of *gypsum*, and owing to the war a considerable impetus has been given to the manufactures in which this mineral is used.

The photographs reproduced in this issue will give an idea of some of the deposits in Southern Yorke's Peninsula.

No further work has been done at the Carrickalinga *abumite* find. A trial parcel of 20 tons was shipped to England, but no returns have yet been received.

Mainly in consequence of the unsettled state of things resulting from the war, operations at the various finds of radio-active ores in the State are almost at a standstill.

No work is in progress at the *Radium Extraction Company's* holdings near *Mount Painter*. At *Radium Hill*, near *Olary*, 40 tons of concentrates have been produced from 212 tons of ore.

At the *Crystal Salt Company's* property, between Port Augusta and Yorke's Crossing, from 35 to 40 men are employed on constructional work.

On pages 22 to 31 will be found the logs of the bores put down by the department in the Mount Monster Gold Mine, Blackfellow's Creek, hundred Kuitpo, and the Bingo (New Mount Lyell Consols) Copper Mine, near Kadina.

For further particulars regarding these mines—

Mount Monster, vide Record, page 251.

Bingo, vide Record, page 29, and Reviews Nos. 15-21.

It is proposed to continue the publication of the logs of the boring work done by the Department in forthcoming issues of the Review.

One hundred and fifty-six licences to search for oil have been issued during the six months. The two bores for oil in the South-East are still in progress—near Kingston (Mr. Whaley and partners) and near Robe (S.A. Oil Wells Company)—and it is understood that a considerable depth has been reached in each.



Gypsum Deposit, "Dry Bone" Lake, Hundred of Warrenben, Y.P.



Gypsum Lake near Marion Bay Y.P.

DEPARTMENT OF MINES.

"THE NATIVE INDUSTRIES ENCOURAGEMENT ACT, 1872."

NOTICE OF THE OFFER OF A BONUS FOR THE DISCOVERY OF OIL.

Adelaide, July 26th, 1915

A bonus of £5,000 is offered to the person or body corporate which first obtains from a bore or well situated in the State of South Australia 100,000galls. of crude petroleum, containing not less than 90 per cent. of products obtainable by distillation.

No application for a bonus will be considered unless the following conditions have been strictly complied with :—

1. The applicant for the bonus must have furnished to the Minister of Mines, during the progress of drilling operations—

- (a) A monthly record of work done ;
- (b) A full log of all bores and wells sunk, whether successful or unsuccessful ;
- (c) Samples of materials passed through by the bores, to be taken at every 50ft. sunk, and also at every change of country encountered ;
- (d) A declaration pursuant to " The Statutory Declarations Act, 1835," of the exact locality of each bore or well. (This should be furnished with the first monthly report on the bore or well).

2. The oil must have been stored at the bore or well from which it has been obtained until the whole 100,000galls. has accumulated.

3. The applicant must furnish with his application—

- (a) The certificate of a licensed surveyor nominated by the Minister of Mines as to the quantity of oil so stored ;
- (b) The certificate of the Government Analyst of the result of his analysis of samples of the oil taken by a person nominated by the Minister of Mines ;
- (c) A declaration pursuant to " The Statutory Declarations Act, 1835," that the whole of the oil for which the bonus is claimed was obtained from the bore or well where it is stored.

4. Within 24 hours of the first discovery of oil in the well or bore, notice of such discovery must be sent to the Minister of Mines.

5. Any person who desires at any time to inspect or test the well or bore on behalf of the Minister of Mines must be granted every facility for this purpose.

6. The applicant must have done nothing contrary to the provisions of " The Mining Act, 1893," or " The Mining Act Amendment Act, 1900," or of any lease or licence granted to the applicant under either of these Acts.

R. BLUNDELL, Minister of Mines.

CRUSHING AND CYANIDING PLANTS.

RETURNS FROM GOVERNMENT CRUSHING AND CYANIDING PLANTS FOR THE HALF-YEAR ENDED JUNE 30TH, 1915.

Name of Mine.	Locality.	Weight of Ore.	Gold Bullion Recovered.	Total Value of Bullion.	Yield per Ton, in Shillings.
		Tons cwt. grs.	Ozs. dwts. grs.	£ s. d.	s.
TARCOOLA BATTERY AND CYANIDE WORKS.					
Tarcoola Blocks	Tarcoola	27 0 0	105 6 19	324 10 4	240 $\frac{1}{2}$
Tarcoola Lucky Hit..	"	6 10 0	2 5 16	7 18 8	28 $\frac{3}{4}$
Royal George	3 Miles W. of Tarcoola	50 0 0	52 2 14	198 13 4	79 $\frac{1}{2}$
Morning Star	Tarcoola	17 10 0	23 5 22	85 6 5	97 $\frac{1}{2}$
Tarcoola Perseverance	"	50 0 0	67 11 16	248 0 6	99
Lake Labyrinth	25 Miles E. of Tarcoola	16 10 0	16 13 7	61 5 3	74 $\frac{1}{2}$
Royal George	3 Miles W. of Tarcoola	64 0 0	22 5 15	85 10 1	26 $\frac{3}{4}$
Tarcoola Blocks	Tarcoola	42 0 0	101 0 10	235 5 11	112
Morning Star	"	25 0 0	39 0 0	147 11 0	118
Mines (sands only) ..	"	210 0 0	11 16 6	47 5 0	4 $\frac{1}{2}$
Tarcoola Perseverance	"	50 0 0	58 13 6	216 11 1	86 $\frac{1}{2}$
Lake Labyrinth	25 Miles E. of Tarcoola	12 0 0	7 12 15	26 13 7	44 $\frac{1}{2}$
Curdnatta	Tarcoola	11 0 0	25 8 6	95 19 5	174 $\frac{1}{2}$
Day Dawn	"	52 0 0	80 9 15	257 10 9	99
Wilgena Enterprise .	Earea Dam	5 0 0	6 10 22	23 18 8	95 $\frac{3}{4}$
Morning Star	Tarcoola	21 0 0	25 2 9	96 5 9	87 $\frac{1}{4}$
Total		659 10 0	645 5 6	2,158 5 8	65 $\frac{1}{2}$
Grand total since starting of battery ..		6,064 12 0	8,905 14 18	31,203 3 0	102 $\frac{3}{4}$

MOUNT TORRENS BATTERY AND CYANIDE WORKS.

Mines (sands only) ..	Mt. Torrens	80 0 0	3 6 16	13 6 8	3 $\frac{1}{2}$
Cahill's	Blumberg	18 14 0	84 1 5	324 13 0	347 $\frac{1}{4}$
Total		98 14 0	87 7 21	337 19 8	68 $\frac{1}{2}$
Grand total since starting of battery ..		10,637 5 3	6,105 17 4	23,116 1 6	42

PETERSBURG BATTERY AND CYANIDE WORKS.

Norman	Orooroo	0 16 0	0 17 0	2 15 0	68 $\frac{3}{4}$
Homeward Bound ..	Mannahill	3 5 0	6 1 17	23 9 0	144 $\frac{1}{2}$
Norman	Orooroo	4 6 0	0 10 0	1 15 0	8
New Milo	Wadnaminga	23 5 0	55 2 10	185 18 8	160
Homeward Bound ..	Mannahill	4 12 0	4 8 1	17 7 10	75 $\frac{1}{2}$
"	"	3 16 0	3 14 3	12 9 0	65 $\frac{1}{2}$
Total		40 0 0	70 13 7	243 14 6	121 $\frac{3}{4}$
Grand total since starting of battery ..		4,995 10 0	4,507 2 11	16,765 15 9	67

RETURNS FROM GOVERNMENT CRUSHING AND CYANIDING PLANTS—*continued.*

Name of Mine.	Locality.	Weight of Ore.	Gold Bullion Recovered.	Total Value of Bullion.			Yield per Ton, in Shillings.
		Tons cwt. qrs.	Ozs. dwts. grs.	£	s.	d.	s.
GLENLOTH BATTERY AND CYANIDE WORKS.							
Options and Others (sands only)	Glenloth	200 0 0	46 0 0	139	14	6	14
Lone Hand.....	"	16 0 0	9 2 9	29	17	3	37½
Wilgena G. M.	Earea Dam	4 0 0	2 12 8	10	1	0	50¼
Total		220 0 0	57 14 7	179	12	9	16½
Grand total since starting of battery ..		227 9 0	2,106 7 10	7,021	4	10	49½

Chiefly Sands treated. 850 tons not included in above.

A summary of the work done for the year ended June 30th, 1915, shows that 57 parcels of ore have been received for treatment, comprising 1,651 tons which produced 1,575¾ ozs. of gold; valued at £5,437 10s. 5d. In addition 1,770 tons of tailings have been treated, and 655 assays and tests made of small parcels and parcels under treatment.

RETURNS FROM CRUSHING AND CYANIDING PLANTS (OTHER THAN GOVERNMENT) FOR THE HALF-YEAR ENDED JUNE 30TH, 1915.

Name.	Ore Treated.	Gold Bullion Recovered.	Value.			Yield per Ton, in Shillings.
	Tons cwt. qrs.	Ozs. dwts. grs.	£	s.	d.	s.
DELORAINÉ GOLD MINE.						
Battery treatment	1,245 0 0	569 0 0	2,126	13	6	—
Total*	1,245 0 0	569 0 0	2,126	13	6	34

* Also 1·6 tons copper.

WADNAMINGA (ALLANSON & CRITCHLEY).

Virginia (tailings cyanided)	756 0 0	267 0 0	604	16	0	16
Thunder Queen (battery only) ..	250 0 0	75 0 0	257	0	0	20½
Total	1,006 0 0	342 0 0	861	16	0	17

KIRKEEK'S TREASURE (J. HEITHERSAY).

Battery treatment	40 0 0	18 13 11	69	0	0	—
Total	40 0 0	18 13 11	69	0	0	34½

**TOTAL BATTERY AND CYANIDE RETURNS FROM ALL PLANTS
FOR SIX MONTHS ENDED JUNE 30TH, 1915.**

Name.	Ore Treated.	Gold Bullion Recovered.	Value.	Yield per Ton, in Shillings
	Tons. cwt. qrs.	Ozs. dwts grs.	£ s. d.	s.
Tarcoola	659 10 0	645 5 6	2,158 5 9	65½
Glenloth	220 0 0	57 14 7	179 12 9	16½
Mount Torrens	98 14 0	87 7 21	337 19 8	68½
Petersburg	40 0 0	70 13 7	243 14 6	121½
Deloraine	1,245 0 0	569 0 0	2,126 13 6	34
Wadnamanga	1,006 0 0	342 0 0	861 16 0	17
Kirkeek's Treasure	40 0 0	18 3 11	69 0 0	34½
Total	3,309 4 0	1,790 14 4	5,977 2 2	36

COPPER.

AVERAGE MONTHLY PRICE OF COPPER, JANUARY TO JUNE, 1915.

	Standard.			Best Selected.		
	£	s.	d.	£	s.	d.
January	60	17	7	..	65	14 5
February	63	12	6	..	70	5 0
March	66	5	5	..	73	12 3
April	75	3	5	..	82	19 5
May	77	14	3	..	87	13 9
June	82	13	8	..	94	3 4
Average for the six months.....	71	1	1	..	79	1 4

AVERAGE PRICE OF STANDARD COPPER FOR THE LAST TEN YEARS.

	£	s.	d.		£	s.	d.
1905	64	16	10	1910	57	3	3
1906	87	8	10	1911	56	1	10
1907	82	1	11	1912	73	1	3
1908	60	0	10	1913	68	5	8
1909	58	17	2	1914	60	8	1*

Average for the 10 years, £66 16s. 7d.

* Quotations for nine months only.

REPORTS ON BORING OPERATIONS.

BORING OPERATIONS AT THE POONA AND MATTAPARA MINES,
MOONTA.*Report by Mr. A. W. Matthews, Foreman.*

The work has been confined to the completion of No. 4 Bore, Poona Mine, Moonta ; shifting and re-erecting the plant on the Wallaroo Extended Mine, Kadina ; and boring No. 3 Bore in that lease to a depth of 781ft.

POONA MINE, NO. 4 BORE.—Continued from 303ft. (*vide* Review No. 21, page 17).

- 303ft.
- to Country rock showing a little mineral.
- 317ft. 6in.
- to Quartz.
- 319ft. 6in.
- to Country rock showing a little iron pyrites.
- 323ft.

At 323ft. cut the lode, consisting of 2ft. of quartz showing a small percentage of yellow sulphide, and 3ft. of lode matter heavily charged with iron. At 328ft. entered hard red footwall country, and continued in same to 389ft., at which depth boring was discontinued.

WALLAROO EXTENDED MINE, NO. 3 BORE.—For details of previous bores (*vide* Reviews Nos. 15, page 15, and No. 16, page 14).

Angle of Bore 70° , direction N.E.

Surface

- to Surface loam, clay, and limestone.
- 10ft.
- to Decomposed country, very broken.
- 36ft.
- to Sandstone with bands of grey and blue country.
- 56ft.
- to Grey country rock.
- 77ft.
- to Broken blue country rock.
- 109ft.
- to Country with bands of schist and quartzite.
- 120ft.
- to Broken blue country.
- 174ft.
- to Blue country with bands of quartzite.
- 190ft.
- to Blue country with seams of dolomite.
- 210ft.
- to Broken blue country and small quartz seams.
- 254ft.
- to Broken blue country and small quartz and dolomite seams.
- 269ft.
- to Blue country with seams of hard spar and dolomite.
- 314ft.
- to Blue country with occasional bars of hard quartzite.
- 414ft.
- to Hard broken country rock.
- 484ft.
- to Hard blue country rock.
- 537ft.

to	Country showing a little iron pyrites.
540ft.	
to	Country rock.
554ft.	
to	Quartz.
554ft. 4in.	
to	Hard broken blue country rock.
639ft.	
to	Country showing a little mineral and intersected with seams of dolomite
674ft.	carrying a little yellow sulphide.
to	Country and small seams of quartz and dolomite.
685ft.	
to	Country mixed with seams of dolomite.
690ft.	
to	Broken country rock.
775ft.	
to	Country rock with occasional bands of hard spar.
781ft.	
Boring in progress.	

BORING OPERATIONS AT THE CALCOOKRA AND MILTALIE MINES NEAR FRANKLIN HARBOR.

Report by Mr. C. F. Duffield, Foreman.

No. 3 BORE, Calcookra Mine (*vide* Review No. 21, page 19). Angle of bore, 30 in 100, to cut the lode at 200ft.

Surface	
to	Surface loam and limestone rubble.
3ft.	
to	Micaceous schist with bars of quartz and calcite.
90ft.	
to	Biotite and siliceous schist with occasional bars of quartz.
310ft.	

Bore completed.

It was then decided to put a bore down on the other side of the outcrop, and No. 4 BORE was started 30ft. N.W. from the outcrop and opposite No. 2 bore which is dipping N.W. Angle of bore, 40 in 100.

Surface	
to	Loam.
1ft.	
to	Micaceous schist.
9ft.	
to	Decomposed limestone country.
37ft.	
to	Slate.
41ft.	
to	Biotite schist with hard bars of siliceous pegmatite.
130ft.	

Bore completed.

At 125ft. this bore crosses No. 2 bore, thus proving conclusively that the lode had not turned, nor did it continue down to any depth.

The boring plant was then removed to the MILTALIE COPPER AND SILVER-LEAD MINE, situated 17 miles N.W. from Franklin Harbor.

Owing to the water in this mine not being fit for boiler purposes, a pumping plant and condenser capable of condensing 300galls. per diem had to be erected.

The bearing of the lode in this mine at the 40ft. level was found to be N. and S., dipping W. at an angle of 45°.

No. 1 BORE, situated 240ft. W. of the outcrop, to cut the lode at 200ft. Angle of bore, 20 in 100.

Surface

to Limestone.

5ft.

to Granitic country.

141ft.

to Quartzite.

168ft.

to Highly felspathic biotite schist.

231ft.

to Soft lode material charged with iron pyrites.

235ft.

to Soft broken country.

240ft.

to Granitic rock.

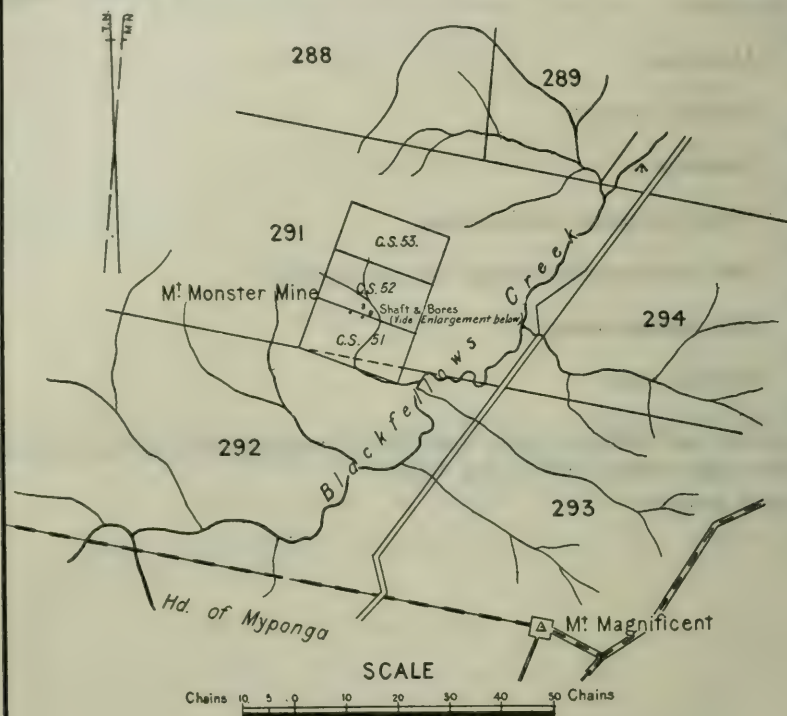
250ft.

Owing to the sand falling in badly from 231ft. it was necessary to ream the hole out to take a 2 $\frac{3}{8}$ in. casing before going deeper.

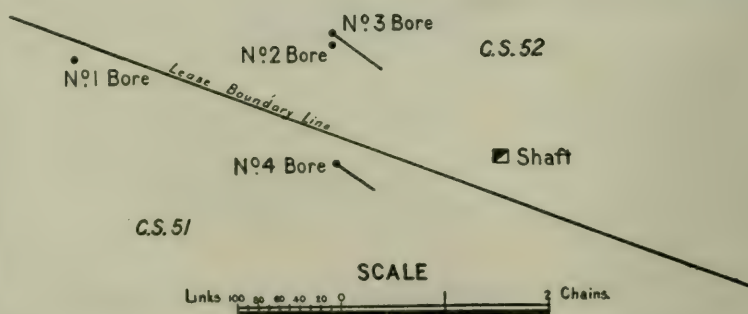
Reaming in progress.

PLAN
SHOWING LOCATION OF BORES-AT
MT MONSTER MINE

Hd. of Kuitpo




















ENLARGEMENT



SOUTH AUSTRALIA
DEPARTMENT OF MINES

N^o 1 BORE M^r MONSTER GOLD MINE H^o OF KUITPO
Vertical Bore on Section 51

DEPTH FROM SURFACE	SECTION	THICKNESS OF ROCK	DESCRIPTION OF ROCK	REMARKS ASSAY RETURNS
		FT IN		
6 0		6 0	Surface loam and clay	
		77 0	Sandstone with quartz and ironstone veins	
83 0		3 1/2 Bore 37 0	Sandstone with Mica and little Pyrites	
120 0 125 0		3 0	"	
		142 0	Granite	
265 0		50 0	Granite, Lode formation with Quartz	
315 0		17 0	Granite Swarm of Feldspar	
332 0		25 0	Granite with Quartz veins	
355 0		65 0	Broken Granite	
420 0 425 0 440 0		3 0	3 ft of Quartz	
		18 0	Granite 6 inches quartz	
		69 0	Granite	
570 0 520 0		10 0	Lode material Spar, Quartz and Iron veins	
		120 0	Granite	
640 0 642 0 645 0 645 0		5 0	Quartz	
		55 0	Granite	
700 0		23 1/8 Bore.		

Assays shows
traces of
Gold

M. A. Matthews
Chief Inspector of Mines

SOUTH AUSTRALIA
DEPARTMENT OF MINES

N^o 2 BORE M^r MONSTER GOLD MINE H^o OF KUITPO

Vertical Bore on Section 52

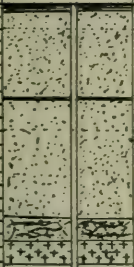
DEPTH FROM SURFACE	SECTION	THICKNESS OF ROCK		DESCRIPTION OF ROCK	REMARKS ASSAY RETURNS
		FT	INH		
6.0		6	0	Surface loam and Clay	
32.0		(31)	0	3 1/2 Bore	
		153	4	Sandstone with small Quartz veins	
159.4				2 1/2 Bore	
172.6		13	4	Sandstone and seams of Iron 2 thick	
190.0		17	4	Sandstone " small Quartz seams	
240.0		10	0	Granite	
		112	0	Slate	
312.0		1	0	12 Quartz and Spar	
313.0		7	0	Slate	
320.0		36	10	Granite	Assays show traces of Gold
356.0		3	0	3 ft of Quartz and Spar	
359.0		6	0	Granite	
368.0		6	0	6 ft of Quartz and Spar	
383.0		15	7	Granite	
				1 1/4 Bore	

W. Matthews
Chief Inspector of Mines

SOUTH AUSTRALIA
DEPARTMENT OF MINES

N^o 3 BORE M^r MONSTER GOLD MINE H^o OF KUITPO

Angle of Bore 20 in 100 on Section 52

DEPTH FROM SURFACE	SECTION	THICKNESS OF ROCK		DESCRIPTION OF ROCK	REMARKS ASSAY RETURNS
		FT	IN		
61.0		8 0		Surface loam and Clay	Assay from Lode showed traces of Gold
		49 2)		$\frac{25}{8}$ Bore	
		69 0		Sandstone	
75.0 16.0		1 0		Quartz	
		91 0		Sandstone	
167.0		18 0		18 ft Lode Quartz Sandstone and Iron veins	
185.0		18 0		Granite	
203.0				$\frac{13}{4}$ Bore	

W. Matthews
Chief Inspector of Mines

SOUTH AUSTRALIA
DEPARTMENT OF MINES

N^o 4 BORE M^o MONSTER GOLD MINE H^o OF KUIT PO

Angle of Bore 10 in 100

on Section 51

DEPTH FROM SURFACE	SECTION	THICKNESS OF ROCK		DESCRIPTION OF ROCK	REMARKS ASSAY RETURNS
		FT	IN		
6.0		6	0		
(30.3)		52	0	$23\frac{1}{2}$ Bore Sandstone	
58.0		2	0	Quartz	
60.0		15	0	Sandstone	
75.0		21	3	Sandstone and Slate	
96.5		22	4	Sandstone	
113.7		23	5	Sandstone and Quartz Veins	
142.0		18	6	Sandstone Quartz and Iron Veins	Assay Showed
160.6		14	1	Sandstone and Quartz Veins	Traces of
174.7		11	5	Sandstone	Gold.
186.0		67	0	Granite	
253.0		26	0	Quartz Granite and Felspar	
278.0		16	2	Granite	
295.2				$13\frac{1}{2}$ Bore.	

W. A. Matthews
Chief Inspector of Mines

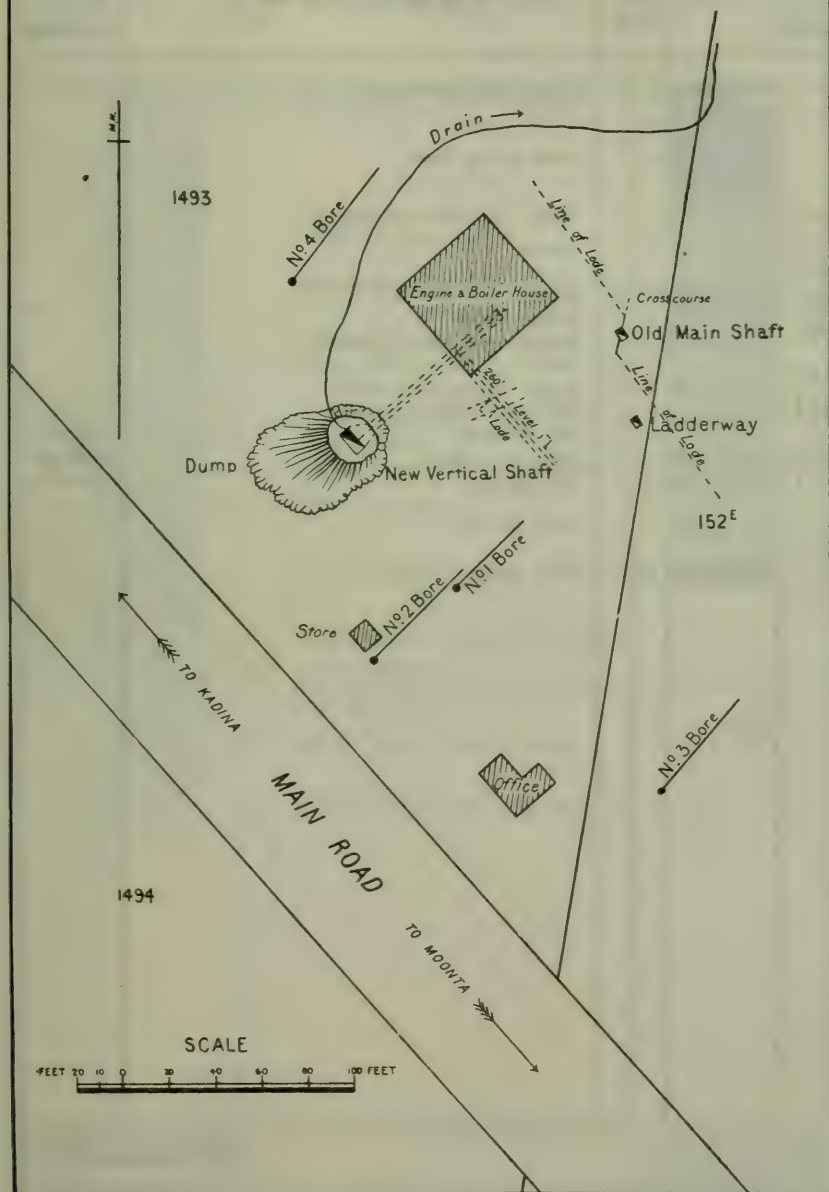
PLAN

SHOWING POSITION OF WORKINGS & LOCATION OF BORES AT THE

MOUNT LYELL WALLAROO CONSOLS MINE



















FORMERLY KNOWN AS THE "BINCO"

Sec No 1493 Hd. of Wallaroo



SOUTH AUSTRALIA
DEPARTMENT OF MINES
Nº 1, BINGO BORE Hº OF WALLAROO

Angle of Bore 1 in 10' on Section 1493

DEPTH FROM SURFACE	SECTION	THICKNESS OF ROCK	DESCRIPTION OF ROCK	REMARKS ASSAY RETURNS
8.0 22.0		0 0	Surface loam, Limestone & Clay Decomposed Country with Iron and Quartz seams	
		90	Broken country Rock	
112.0 116.0		3 0	Country mixed with small Quartz veins	
146.0 169.0 170.0		33 0	Granite	
195.0 207.0		20 0	Broken Country Showing Quartz veins	
		2 0	Granite	
224.0		25 0	Broken Country	
		12 0	Country showing streaks of Dolomite	
244.0 251.0 254.10		17 0	Granite	
		20 0	Country showing Quartz veins	
296.0 300.0 310.0 314.0		7 10	Quartz and Dolomite formation	
		41 2	Lode yellow Sulphide	
		4 0	Lode formation	
		10 0	Hard bar of Quartz	
		10 0	Lode formation	
		4 0	Magnetic Iron.	
		56 0	Lode formation	
370.0 393.0		23 0	Hard broken Country	

7%
Copper
2 dwts of
Gold per ton.

W. Matthews
Chief Inspector of Mines

SOUTH AUSTRALIA
DEPARTMENT OF MINES
Nº2 BINGO BORE H^o OF WALLAROO
Angle of Bore in 10' on Section 1493

DEPTH FROM SURFACE	SECTION	THICKNESS OF ROCK		DESCRIPTION OF ROCK	REMARKS ASSAY RETURNS
		FT	IN		
8.0		8	0	Surface loam. Limestone and Clay	
52.0		44	0	Decomposed country with Quartz veins	
		123	0	Broken Country	
175.0		67	0	Hard broken Country	
242.0		15	0	Showing Sulphide	
257.0		31	0	Broken country	
288.0		4		4 inches of Quartz showing Sulphides freely	
342.0		53	8	Broken country	
408.0		66		Country showing Pyrites and Sulphide	
424.9		16	9	Lode formation showing Sulphide	
449.0		24	3	Hard Quartzite	
458.0		9	0	Broken country showing Pyrites and Quartz veins	
480.0		22	0	Hard Country	
519.0		39	0	Country showing Calcite veins	
573.9		54	9	Slate showing Calcite and small Quartz seams	

M. Matthews
Chief Inspector of Mines

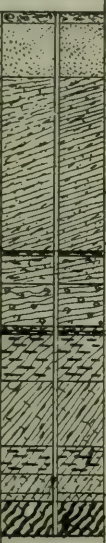
SOUTH AUSTRALIA
DEPARTMENT OF MINES
No 3, BINGO BORE H^o OF WALLAROO
Angle of Bore 15' in 100' on Section 152^E

DEPTH FROM SURFACE	SECTION	THICKNESS OF ROCK	DESCRIPTION OF ROCK	REMARKS ASSAY RETURNS
0.0		0	Surface loam	
53.0		45 0	Sandstone with Quartz and Iron veins	
89.0		36 0	Grey country Rock	
94.0		5 0	Rock with Muncie	
129.0		35 0	Blue Rock	
150.0		21 0	"Quartz" and Calcite	
161.0		17 0	Country showing Muncie freely	
171.0		3 0	with seams of Sulphide	
183.0		16 0	"Lode Showing Sulphide"	
210.0		21 0	Country Showing little Sulphide	
211.0		1 0	Country Rock	
235.0		24 0	Quartz veins	
244.0		6 0		
352.0		111 0	Hard country Rock	

W. Matthews
Chief Inspector of Mines

SOUTH AUSTRALIA
DEPARTMENT OF MINES
N°4 BINGO BORE HP OF WALLAROO

Angle of Bore 15' in 100 on Section 1493

DEPTH FROM SURFACE	SECTION	THICKNESS OF ROCK	DESCRIPTION OF ROCK	REMARKS ASSAY RETURNS
0.0		8 0	Surface loam and Limestone	
48.0		40 0	Sandstone	
		134 0	Hard country Rock	
182.0		2 0	Rock with small Quartz veins with Murchisonian sulphide	
184.0		25 0	Rock with Quartz veins and Calcite.	
209.0		34 0	Rock showing Calcite	
243.0		4 0	" " "	
247.0		1 0	" " "	
248.0		30 0	Hard blue Rock	
278.0		56 0	Lode formation	
334.0		23 0	Blue Rock	
357.0		16 0	Lode showing Sulphide	Assay from 3 1/2 to 5% Copper
373.0		5 0	" formation	3 1/2 to 5% Copper
378.0		24 0	Hornblende	
402.0				

W. A. Matthews
 Chief Inspector of Mines

SUBSIDIES.

The Legislature provided in the Mining Act, 1893, and in previous measures for the encouragement of Mining.

The following schedule shows what subsidies have been paid from the inception of the system to June 30th, 1915, and the sums repaid. In the ordinary way these repayments are made from profits—50 per cent. of such profits being devoted to repayments. In two instances only have the profits won enabled full repayments to be accomplished—the Crystal Mine, at Echunga, which repaid £76 7s. 6d. from that source, and the once-famous New Alma and Victoria Mine, Waukaringa, which repaid in full the first subsidy, £3,000. The remainder of the recoveries was derived from sales of mining plant held as security. The total of the subsidies advanced is £61,115 13s., of which £7,642 17s. 10d. has been recovered, leaving a debit balance of £53,472 15s. 2d. Portion of this outstanding debt is represented by machinery that has fallen into the hands of the Government; add to this the value of the metals won, and the State in general will probably have benefited beyond the money value of the debit balance.

STATEMENT OF SUBSIDIES PAID FROM COMMENCEMENT TO
JUNE 30TH, 1915.

Name of Company or Person to whom Subsidy Granted.	Locality.	Amount Advanced.	Amount Repaid.
		£ s. d.	£ s. d.
Adelaide Crushing, Grinding, and Amalgamating Mill Co.	—	100 0 0	—
Algebuckina Gold Mining Syndicate	Algebuckina	52 10 11	52 10 11
Alma Extended Gold Mining Co.	Waukaringa	3,000 0 0	172 5 0
Backhouse, T. S.	Worturpa	100 0 0	—
Barossa Enterprise Gold Mining Coy.	Barossa, Hundred of ..	232 2 6	—
Belalie Copper Mining Syndicate	Bundaleer	392 12 3	—
Beltana Rapid Ore Treatment Syndicate....	Near Beltana	521 3 9	—
Bevilaqua & Angel	Palmer (near)	57 18 0	—
Bird-in-Hand Gold Mining Co., Ltd.	Woodside	3,000 0 0	—
Blackfellow's Creek Gold Mining Co., Ltd. .	Kuitpo, Hundred of ..	660 6 7	35 0 0
Callington Copper Mining Co.	Callington	148 8 7	—
Cockburn Copper Mining Co., N.L.	Mutooroo	273 18 5	173 13 8
Commonwealth Silver-lead Co., Ltd.	Strathalbyn, Hund. of	750 0 0	69 17 9
Copper Hill Mining Co., N.L.	Kadina	391 15 0	115 0 0
Cornwall Copper Mining Syndicate, N.L. .	Kadina, Hundred of ..	500 0 0	—
Courtess of Jersey Gold Mining Co., N.L. .	Wadnaminga	321 0 0	—
Cowell Consolidated Silver and Copper Mines	Hds. Miltalie & Hawker	406 9 8	—
Currency Creek Copper Mining Co.	Currency Creek	28 6 5	20 0 3
Crystal Gold Mining Co.	Echunga	563 17 6	176 7 6
Davis, A. (Dorris Fabian Mine)	Leigh's Creek, Near ..	250 0 0	—
Ding Dong Copper Mining Syndicate	Kanmantoo, Hund. of	124 0 4	—
Duke of Cornwall Gold Mining Syndicate ..	Mount Pleasant	458 17 4	43 10 0
Eagle Silver Mining Co., Ltd.	Glen Osmond	500 0 0	—
Ediacara Consols Silver Mining Co., N.L. .	Ediacara	651 12 1	465 17 0
Enterprise Copper Mining Co., N.L.	Barossa, Hundred of ..	150 0 0	9 16 0
Enterprise Excelsior (Barossa Amalgamated)	"	2,000 0 0	—
Eureka Gold Mining Co., Ltd.	Woodside	1,500 0 0	—
Fifth Creek Central Silver and Copper Mining Co., N.L.	Fifth Creek	253 2 4	—
Fortress Hill Mining Syndicate	Fortress Hill	60 0 0	—
Glenloth Mining, Battery, & Options Co., N.L.	Glenloth	515 4 7	515 4 7
Glenloth Wells Pioneer Blocks Co., Ltd.	"	100 0 0	22 18 5
Great Eastern Gold Syndicate, N.L.	Wadnaminga	61 12 2	—
Gumeracha Gold Mining Syndicate	Gumeracha	75 0 0	—
Golden Point Claims	Wonna	50 0 0	—
Great Ironclad Gold Mining Co.	Teetulpa	218 6 9	—
Hakendorf, C. H., and Williams, J. (Glen- markie Mine)	Glenloth	221 17 6	—
Hamley Copper Mining Co.	Wallaroo	2,100 0 0	—
Homeward Bound and Klondyke Gold Mines, N.L.	Mannahill	192 17 1	35 18 9

STATEMENT OF SUBSIDIES PAID—continued.

Name of Company or Person to whom Subsidy Granted.	Locality.	Amount Advanced.	Amount Repaid.
		£ s. d.	£ s. d.
Heithersay, J. (Kirkeeks Treasure Mine) ..	Waukaringa	549 8 0	—
Hunter Bros. (Lady Millicent Mine and Nuccaleena Mines)	Mochatoona	499 19 10	—
Ireby Gold Mining Syndicate	Mount Grainger	35 4 3	—
Kanappa Copper Mining Co.	Hundred Angas	146 19 11	—
Kanmantoo Copper Mines Syndicate, N.L. ..	Kanmantoo	150 2 1	—
Kingsborough, W. A. (Benowrie Mine)	Near Cutana	31 18 6	—
Kirkeek's Treasure Gold Mining Co.	Waukaringa	691 8 1	—
King's Bluff G.M. Co., N.L.	Olary	622 0 8	—
Kohinoor Gold Mining Co., N.L.	Kangaroo Island	100 0 0	—
Kohinoor Mine (H. G. Taylor)	"	200 0 0	—
Lady Alice Gold Mining Co.	Barossa, Hundred of ..	1,797 2 3	—
Lady Franklin Syndicate	Port Lincoln	200 0 0	40 0 0
Leigh's Creek South Coal Mining Co., N.L.	Leigh's Creek	95 16 4	95 16 4
McMurtie's Claims	Kuitpo, Hundred of ..	199 19 11	—
Mingary Gold Mining Co.	New Luxemburg	400 0 0	—
Montacute Gold and Copper Mining Co., N.L.	Sixth Creek	400 0 0	—
Mount Victoria Mine	Bimbowrie	50 0 0	—
Mount Malvern Silver Mining Co.	Blackwood	491 3 6	—
Mount Malvern Silver-lead Mining Co., N.L.	Clarendon	1,539 6 4	—
Mount Pangæus Gold Mining Co.	Hahndorf (near)	56 1 4	—
Mount Monster Gold Mining Syndicate	Kuitpo, Hundred of ..	350 0 0	1 0 0
Mt. Grainger Ironclad Gold Mining Syn., Ltd.	Mount Grainger	21 18 10	—
Mount Torrens Gold Mining Co.	Mount Torrens	1,000 0 0	—
Mount Remarkable Mining Co., Ltd.	Wongyarra, Hund. of	122 8 1	15 0 0
Musgrave Ranges Prospecting Association ..	Musgrave Ranges	47 2 0	—
Mount Painter Corundum and Gem Syndicate	Mount Painter	47 3 1	—
Morning Star Gold Mining Co.	Teetulpa	68 4 6	—
Mutooroo Copper and Silver Mining Co., Ltd.	Mutooroo	500 0 0	500 0 0
Nackara Proprietary Copper Mining Co., N.L.	Nackara	100 0 0	—
Nackara Proprietary Gold Mining Syndicate.	Nackara	100 0 0	—
New Banksia Gold Mining Syndicate	Nairne	250 0 0	—
New Alma and Victoria Gold Mining Co., Ltd.	Waukaringa	3,000 0 0	3,000 0 0
New Ajax Consolidated Gold Mining Co., N.L.	"	750 0 0	—
New Era Gold Mining Co., Ltd.	Woodside	1,000 0 0	—
New Glenloth Battery and Mining Co., N.L.	Glenloth	750 0 0	—
New Medora and Grainger Gold Mines Syn., N.L.	Mount Grainger	1,421 9 9	—
New Mingary Gold Mining Co.	New Luxemburg	250 0 0	—
New Mount Grainger Gold Mines, N.L.	Mount Grainger	393 7 1	220 0 0
Northern Mining and Smelting Co., N.L. ..	Mount Fitton	350 0 0	3 15 0
North Nairne Gold Mining Co.	Nairne	500 0 0	—
North-West and West Australian Pros. Co. ..	North-west of S.A. ..	104 9 7	—
North-West Prospecting Association, N.L. ..	Tarcoola	150 0 0	—
Nil Desperandum Teetulpa Devt. Co., N.L. ..	Teetulpa	64 14 4	20 5 6
Nilpena Copper Mining Co., Ltd.	Blinman	290 5 3	—
Olivaster Silver-Lead Mining Co., N.L.	Hundred Yankalilla ..	260 14 11	—
Onkaparinga Dredging and Mining Co., and Echunga Propy. Hydraulic Gold Sluicing Co.	Biggs' Flat	1,050 0 0	700 0 0
Paul's Consolidated Copper Propy., N.L. ..	Burr Well	525 0 0	14 9 0
Parara Mining Co., N.L.	Maitland	571 3 8	—
Paringa Mining Syndicate	Callington	399 16 8	244 0 0
Paringa and West Kanmantoo Consolidated Copper Mine, N.L.	"	1,144 3 4	10 5 0
Pioneer Gold and Copper Mining Syndicate	"	95 15 6	—
Polmear, W. J. L.	Kadina	800 0 0	—
Queen Bee Mining Co., N.L.	New Luxemburg	250 0 0	250 0 0
Quorn Manganese and Silver Mining Co.	Quorn	10 9 10	—
Rapid Bay Silver Mining Co., N.L.	Yankalilla, Hund. of ..	136 2 4	—
Robertstown Bright Silver Lead Mines	Hd. Bright	170 5 11	—
Royal Charlie Gold Mining Co.	Mannahill	153 18 5	—
Rees, R., Ajax Mine	Waukaringa	604 14 5	—
Sixth Creek Gold & Copper Mining Co., N.L.	Sixth Creek	161 1 11	—

STATEMENT OF SUBSIDIES PAID—*continued.*

Name of Company or Person to whom Subsidy Granted	Locality.	Amount Advanced.			Amount Repaid.		
		£	s.	d.	£	s.	d.
Stainbank, A. T.	Fifth Creek.	70	14	11	—	—	—
Sliding Rock Copper Proprietary, N.L.	Sliding Rock.	2,000	0	0	27	17	0
Tarcoola Blocks Gold Mining Co., Ltd.	Tarcoola.	3,995	5	2	150	19	11
Tarcoola Enterprise Gold Mining Co., N.L.	"	100	0	0	19	10	4
Tarcoola Proprietary Gold Mines, N.L.	Tarcoola.	150	4	4	9	15	0
Teatree Gully Gold Mining and Pros. Assn.	Teatree Gully.	234	5	7	—	—	—
Teetulpa Mining and Crushing Co.	Teetulpa.	349	11	4	—	—	—
Teetulpa Prospecting Syndicate.	"	49	15	6	—	—	—
Tumby Bay Copper Mining Co., N.L.	Hutchison, Hund. of ..	725	6	6	—	—	—
Utica Copper Mining Co. N.L.	Burra.	208	12	7	—	—	—
Victoria Hill Amalgamated Gold Mining Syn.	Barossa, Hundred of ..	38	12	6	—	—	—
Victoria Tower Mining Co., N.L.	Mannahill.	345	18	9	90	0	0
Warrakimbo Propy. Copper Mining Synd. ..	Barndioota, Hundred of	220	16	2	—	—	—
Warra Warra Propy. Copper Mines, N.L.	Farina.	322	4	11	322	4	11
Watt's Gully Gold Mining Co.	Gumeracha.	50	0	0	—	—	—
Watt's Gully Reef Claims.	Gumeracha.	50	0	0	—	—	—
Wolters, F. C., & Co.	Echunga.	25	0	0	—	—	—
Walleroo Central Mining Co., N.L.	Kadina.	500	0	0	—	—	—
Westward Ho Mine (Dr. H. Dixon).	Mannahill.	1,000	0	0	—	—	—
Wohler, H., & Co.	Myponga.	20	0	0	—	—	—
Wheal Turner Copper Mining Co., Ltd.	Prospecting on proposed line to Queensl'd Border	1,000	0	0	—	—	—
Winnininnie Gold & Silver Propy. Co., N.L.	Winnininnie.	86	3	6	—	—	—
Woodside Boring and Mining Syndicate	Woodside.	422	17	11	—	—	—
Worturpa Exploration and Mining Co., Ltd.	Worturpa.	800	0	0	—	—	—
Yelta New Copper Mining Co., N.L.	Walleroo.	1,000	0	0	—	—	—
Young Bullfinch Gold Mining Co., N.L.	Talunga, Hundred of	146	3	4	—	—	—
Totals.	—	61,115	13	0	7,642	17	10

ACCIDENTS IN MINES AND QUARRIES.

A gratifying feature of our mining operations in mines and quarries is the infrequency of serious accidents. Act No. 858 of 1904, bringing quarries in the same category as mines as regards the control of the Chief Inspector of Mines has been effective in safeguarding the interests of quarry-men. The following table gives the number of accidents in mines and quarries during the last ten years :—

ACCIDENTS IN MINES AND QUARRIES.

ACCIDENTS IN MINES.				ACCIDENTS IN QUARRIES.			
Year.	Total Number of Accidents Reported.	Number of Persons Injured.	Number of Persons Killed.	Year.	Total Number of Accidents Reported.	Number of Persons Injured.	Number of Persons Killed.
1905	3	1	3	1905	—	—	—
1906	5	—	3	1906	1	1	—
1907	8	4	6	1907	3	1	2
1908	5	4	1	1908	—	—	—
1909	5	5	1	1909	1	1	—
1910	5	3	3	1910	2	1	1
1911	2	—	2	1911	—	—	—
1912	3	2	1	1912	2	—	2
1913	10	8	2	1913	—	—	—
1914	3	2	1	1914	3	2	1
1915*	1	—	1	1915*	—	—	—

* Six months ending June 30th.

ASSAYS AT SCHOOL OF MINES.

NUMBER OF ASSAYS MADE FOR PUBLIC PURPOSES AT THE
SCHOOL OF MINES ASSAY DEPARTMENT DURING THE
SIX MONTHS ENDED JUNE 30TH, 1915.

	1915.					
	January.	February.	March.	April.	May.	June.
Department of Mines	36	148	143	215	150	72
Public assays.....	119	53	107	187	163	164
Totals.....	155	201	250	402	313	236

DECENNIAL RETURN SHOWING, SO FAR AS CAN BE ASCERTAINED,
OUTPUT AND VALUE OF VARIOUS METALS AND MINERALS
PRODUCED IN SOUTH AUSTRALIA.

Year.	GOLD.		SILVER.		SILVER LEAD ORE.		COPPER.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Ounces.	£	Ounces.	£	Tons.	£	Cwts.	£
1905	10,983	45,853	—	—	—	—	130,959	426,511
1906	8,037	27,000	801	104	—	—	164,160	718,609
1907	5,609	20,540	5,845	780	1,000	11,000	158,620	690,000
1908	2,908	12,300	—	—	900	9,000	112,554	338,000
1909	7,111	30,206	1,660	167	70	416	113,940	334,584
1910	6,603	28,000	6,250	625	25	22	102,040	306,120
1911	3,537	15,000	1,400	140	—	—	118,440	332,500
1912	6,592	28,000	2,700	326	—	—	125,900	461,500
1913	6,556	27,800	2,650	300	153	1,100	143,222	488,986
1914	6,258	26,581	3,006	314	18	215	137,614	417,487
Totals	—	261,280	—	2,756	—	21,753	—	4,514,297

Year.	COPPER ORE AND REGULUS.		LEAD.		IRONSTONE FLUX.		LIMESTONE FLUX.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Tons.	£	Cwts.	£	Tons.	£	Tons.	£
1905	2,563	28,434	1,040	369	84,483	48,577	44,498	4,791
1906	—	—	1,000	550	75,226	33,852	31,940	4,791
1907	—	—	—	—	84,600	38,100	31,100	5,800
1908	—	—	—	—	88,000	39,600	29,500	6,000
1909	1,230	4,003	140	90	16,120	8,296	13,765	2,464
1910	—	*9,350	400	260	46,200	21,945	18,600	3,720
1911	—	*11,103	—	—	42,300	26,400	28,700	7,175
1912	—	*10,192	—	—	42,200	26,375	50,600	12,500
1913	—	*8,308	—	—	60,658	37,911	44,300	11,075
1914	—	*8,910	—	—	42,622	37,137	54,054	16,892
Totals	—	80,300	—	1,269	—	318,193	—	75,208

Year.	PHOSPHATE ROCK.		CRUDE SALT.		OTHER METALS AND MINERALS.	Total Value.
	Quantity.	Value.	Quantity.	Value.		
	Tons.	£	Tons.	£	£	£
1905	5,000	5,000	32,500	13,000	1,261	573,796
1906	5,850	5,850	55,000	27,500	2,209	820,465
1907	8,000	8,000	75,000	37,500	2,500	814,220
1908	11,000	11,000	75,000	37,500	4,500	457,900
1909	3,772	3,697	51,407	25,594	3,873	413,390
1910	5,200	5,200	54,000	27,000	†13,600	415,842
1911	5,800	5,800	65,000	40,600	†11,319	450,037
1912	6,100	6,100	64,300	40,187	†10,490	595,670
1913	5,950	6,545	65,000	48,750	†11,851	642,626
1914	6,083	6,691	65,000	48,750	†37,378	600,356
Totals	—	63,883	—	346,381	98,981	5,784,301

* Bluestone, £5,980; Sulphuric Acid, £3,370
 " £4,163 " £6,940.
 " £2,550 " £7,642.
 " £325 " £7,985.
 — " £8,910.

† Including Gypsum, £9,000; Pyrites, £3,370.
 " £7,275; " £2,580.
 " £9,000.

£5,362; Radium and Radio-Active Material, £3,620.
 { £12,207; Kaolin, £16,382.
 { Radium and Radio-Active Material, £5,215.

iced in the State of South Australia

[illegible]

RD

TH
ted
ine.
ode
the
ing

int,
not

ent
but
me
tes,
bed

well
was
n a
ned
rich
ther
end
3 of
the

the
nce
rich
e is
The
3 to
ody
ould
ody

41.1

ent.

Return Showing, so far as can be ascertained, the Quantity and Value of Metals and Minerals Produced in the State of South Australia Annually since 1840.

[illegible]

To face page 36]

* Estimated value of production to July 31st, 1871, *vide Gazette*, August 10th, 1871.

† Incomplete.

j 1914	Including gypsum, 16,276 tons	12,587
	Including kaolin, 10,239 tons	16,382
	Including radium and radio-active material	5,215

REPORTS FORMING ADDENDA TO THE RECORD OF MINES.

REPORTS

BY

The Inspector of Mines (Mr. Henry Jones).

LOCALITY—NORTH

THE WEST BURRA COPPER MINE (*vide* Reviews Nos. 18, 19, 20, and 21).—Situated on section No. 116, in the hundred of Hanson, $3\frac{1}{2}$ miles S.W. from the Burra Mine.

The main underlie shaft on the property has been sunk on the dip of the lode to a depth of 100ft. ; from that depth sinking was continued on a soft break in the country, with isolated bunches of copper-bearing ore to a depth of 57ft., making the total depth of shaft 157ft. from surface.

At the 53ft. level in the shaft, the lode, which is well defined down to that point, was cut off on a fault in the country ; the full extent of the displacement has not yet been determined.

100ft. Level.—A fair amount of driving and crosscutting has been done in different directions at this level with a view of locating the ore body under the break, but so far nothing of a defined nature in the way of lode has been discovered. In some of the drives isolated patches of lode material occurred, carrying copper carbonates, which indicate that the workings at this level are not yet out of the disturbed zone.

50ft. Level.—From the surface down to this level the lode in the shaft is well defined, carrying a high percentage of copper carbonates. Recently a start was made here to drive both ways on the course of the lode. The N.E. drive is in a total distance of 54ft. For the first 20ft. the ore body in the drive is fairly defined and of high grade. At that point a fault crossed the drive in a S.E. direction, which cut off the lode ; the fault here is about 9ft. wide, with two minor faults, farther in, crossing the drive in conformity with the large one, and judging by the trend of these faults and other indications in the drive there are reasonable chances of picking up the displaced portion of the lode by driving S.E. in the vicinity of the main fault.

The S.W. drive at this level has been extended in the hanging wall portion of the formation for a distance of over 30ft. The wall showing in the drive for a distance of about 10ft. is nearly vertical, the other wall has not yet been exposed, which shows that the formation is fairly wide, the ore body for full width of the drive is chiefly ferruginous calcite, containing veins of rich carbonate copper ore. The whole body exposed appears of a promising nature, and should be cut across to prove its width, and from the crosscut a winze could be sunk to test the ore body at greater depth. The winze-sinking would be good prospecting work and would be of greater assistance for locating the position of a drive to intersect the ore body at the 100ft. level.

A sample taken of a vein of ore 12in. wide in the face of S.W. drive gave 41.1 per cent. copper.

A sample taken from 20ft. in N.E. drive for a width of 2ft. gave 38.2 per cent. copper.

A sample taken from ore dump gave 38.9 per cent. copper and 10dwts. silver.

A picked sample from dump gave 48.2 per cent. copper.

These samples show that the ore body already disclosed in the present workings down to the 50ft. level is of fairly high grade and the lode matrix is highly promising for permanency.

The development up to date on this property is very encouraging, and when the work now in progress at the present level is further advanced to determine the full extent and true trend of the displacement in the formation, further exploration work for proving the mine at much greater depth in the settled country will be greatly facilitated. (16-2-15.)

Further Report.

In the main underlie shaft, at the 100ft. level, driving W. in the ore channel is in progress, and the drive is in a total distance of 18ft. A large formation, 8ft. to 10ft. wide, is exposed, consisting chiefly of ferricalcite and ironstone, with bunches and seams of malachite. One vein of ore, 3in. to 6in. wide, traversing the formation is fairly persistent, and appears to contain the greater portion of the values; the other part of the formation is generally of low grade. The drive E. at this level is in 16ft. At that point a fault crossed the drive, bearing S.E., cutting off the formation. The position of the ore body E. of the fault has not yet been determined at this level.

50ft. Level.—At a point 30ft. in the E. drive, where the lode was cut off on a fault, a prospecting drive has been carried in S.E. for a distance of 37ft., but nothing of value has so far been discovered in this drive.

The W. drive in the formation is in a total distance of 42ft. At that point a drive has been put in N., proving the formation to be fully 20ft. wide of ferricalcite, with specks and bunches of copper ore in places, and at one point in the formation a fairly-defined seam of iron oxide and malachite is showing, varying in width from 3in. to 15in. Judging by the characteristics of the ore channel there is a possibility of this promising seam of ore widening out in places for a large extent, and containing a great quantity of ore.

In the face of the W. drive a winze in the formation has been sunk to a depth of 16ft. vertical. At that level a well-defined footwall was intersected, bearing E. and W., dip S. This winze from present depth will be continued down to the 100ft. level in the footwall portion of the formation.

The development to date on this property is of a very encouraging nature, the formation in the W. workings at the 50ft. and 100ft. levels is fairly defined, and appears likely to continue down; the seam of ore traversing the formation is of fairly high grade.

A sample taken for width of seam, 15in., in W. drive, 50ft. level, gave 34.6 per cent. copper. (19-5-15.)

ULOOLOO, MARTIN GLYNN'S CLAIM.—Situated on the Ulooloo Goldfield.

A fair amount of prospecting work has been done, the workings are situated on the side of a hill about 40ft. above the gully, 1 mile W. from Coglin's Creek, and about 5 chains S.E. from Condell's workings. The vein of ore operated on appears to traverse both properties in a N.W. and S.E. direction.

In the outcrop of the lode an underlie pit is down 6ft., in which is disclosed an ironstone formation 14in. wide, showing a fair amount of pyrites, containing a little gold. Two samples were taken of the ironstone obtained in sinking. No. 1 gave 5dwts. of gold per ton and No. 2 2dwts.

At a point 18ft. N.E. from the underlie a vertical shaft has been started, and is now down 20ft. This shaft, being so close to the outcrop, will not test the lode to any great depth. A better and cheaper plan at present would be to sink on the underlie in the formation. This work would show the width of the lode, and the value of the ore could be better determined. (15-3-15.)

THE NUCCALEENA COPPER MINE (*vide* Record, p. 105, and Reviews Nos. 10, 16, and 20).—Situating in the Beltana district.

Many years ago this property was worked extensively. Several shafts were sunk, and tunnels extended on the course of the formation at different levels for several hundred feet, and stoping for a great width done over the drives from water level up to the surface, and some thousands of tons of ore must have been extracted from the various workings.

About two years ago Hunter Brothers acquired this property, and have done a considerable amount of highly necessary preparatory work for proving and working the mine in the sulphide zone.

The main working shaft, sunk by the previous company, is 10ft. by 6ft. in the clear, strongly close timbered with square sets and back laths, and is down a total vertical depth of 203ft. Adjacent to the shaft a large excavation and the foundations for the plant have been taken out, the country at this point is very hard, and the work necessitated a great amount of boring and blasting to complete.

The shaft is now equipped with 30ft. head gear, strong and substantially built, 12 H.P. winding winch and vertical boiler, two steel wire ropes and four wire rope guides from top of the head gear down the shaft. fastened and kept in position under water by heavy weights; also two 50-gall. iron kibbles equipped with fittings for guide ropes and automatic appliance for emptying. Everything is working satisfactorily.

The plant has now been at work for some time, and the large quantity of water in the extensive workings down to the 109ft. level has been bailed out, and it appears to be getting down to near No. 2 plat, but as there are no records of the work done at that level it is impossible to estimate the quantity of water to be bailed out before the lode in that part of the old workings can be examined.

Old Workings.

At 70ft. level in the main shaft a plat has been made, and a drive from the plat carried in N. a distance of 45ft. At that point the lode formation was intersected, consisting of calcite and decomposed rock 8ft. wide. From the crosscut a drive on the course of the lode E. 30ft. has been made, where it connects with an air shaft sunk in the lode from the surface. This drive has been continued E. from the shaft and close timbered for a distance of 99ft.; at that point a break or fault in the country occurs, displacing the formation, making a throw of 9ft. to the N., where the lode continues on its former course E.

From the fault E. a large drive has been carried in 9ft. to 12ft. wide for some considerable distance in the ore channel for about 100ft. in length. This drive is in fair order and has been strongly timbered, and it appears that the ore over the drive has been stoped out up to the surface.

At a point 60ft. E. from the fault in the drive a winze has been sunk to a depth of about 50ft.; at the 25ft. level drives have been extended E. and W. in the formation; the W. drive is in 20ft., and the E. drive 35ft., the lode matrix exposed in both drives is chiefly ferricalcite, containing specks and bunches of fairly high-grade sulphide ore for a width of from 4ft. to 12ft. A few samples of the lode material were taken from this part of the mine, not as bulk samples, as that cannot be done at present, but to show the nature of the ore body at this level, and as no work has been done in the mine for a great number of years the greater portion of the old drives and stopes have fallen in and could not be examined, so there is no possible chance at present to get at the true length, width, and values of the long shoot of ore that was operated in, but judging by what can be seen at the different levels it appears a fairly extensive one and fully justifies taking out the water from the lower workings so as to further prove the ore channel in the sulphide zone.

The present holders are doing fairly good work with the bailing plant, but to further facilitate the unwatering of the lower workings they intend to have the

Marsh pump now on the mine at work as soon as the necessary fittings and piping are available.

About $\frac{3}{4}$ mile S. from the main workings a fair amount of prospecting has been done at different points, and a number of holes sunk to depths of from 3ft. to 6ft., exposing copper-bearing matrix of considerable width. In the different shallow workings and at various places along the surface there are favorable indications of the occurrence of a wide lode formation in the vicinity likely to contain copper ore. Further systematic prospecting should be done on this part of the property.

Eight samples of copper-bearing ore were taken from the different workings, and gave on assay—

Copper.

No. 1. W. drive, 95ft. level, for a width of 4ft. 3in.....	19.0 per cent.
No. 2. N. side, E. drive, 95ft. level, for a width of 8ft.....	6.8 “
No. 3. E. drive, 95ft. level, for a width of 4ft.	9.1 “
No. 4. Half way in E. drive, 95ft. level, for a width of 6ft.	4.8 “
No. 5. Bottom E. drive, 70ft. level, for a width of 6ft. ...	14.6 “
No. 6. Bunch of ore, E. drive, 95ft. level	18.4 “
No. 7. Outcrop E. of creek	8.7 “
No. 8. From Nos. 1 and 2 holes W. of creek	0.5 “

The above six samples from the 70ft. and 95ft. levels are of a very encouraging nature, and tend to show that there are reasonable prospects of the wide formation previously worked in upper levels proving equally as rich in the sulphide zone. (6-5-15.)

THE BLINMAN COPPER MINE (*vide* Record page 31, and Reviews Nos. 7, 14, 15, 16, 18, 19, and 20).—The principal work carried on at present on this mine comprises driving and stoping out ore at different levels from the various E. and W. seams, which cross the main formation and in places extend for several feet into the apparent foot and hanging walls of the latter.

At the 35-fathom level work is in progress on a rich vein of carbonate ore 5in. wide going E. ; it appears promising and likely to continue in that direction ; 6 tons 2cwt.s of ore extracted from here gave 20.3 per cent. copper. Another parcel of 6½ tons is now on the surface ready to be sent to market. Work is also carried on at the 15-fathom and 5-fathom levels in fairly defined veins 5in. to 8in. wide of carbonate ore.

On the surface four men are working on the flue dust and old slag dumps, and are sorting out copper ore of fairly high grade. A sample of the felspathic rock and cuprite in the slag dump gave 3.9 per cent. copper. A sample of the vein at 35-fathom level gave 25.8 per cent. copper, and a sample of the vein cut at 20ft. deep gave 28.7 per cent. copper. (6-5-15.)

WILLIAMS' SILVER-LEAD MINE.—Situated about 8 miles nearly N. from Blinman.

A large amount of prospecting work appears to have been done at one time for a considerable distance in a N. and S. direction on this property by shallow pits ; and at one point two shafts, about 60ft. apart, have been sunk to depths apparently of from 40ft. to 60ft. No work is in progress at present, and there are no means to descend and examine the workings. In the dumps at the shafts, and at various other places along the surface, lode material containing nodules of galena of high percentage could be seen ; and at one point on the side of the hill, in a hole 4ft. deep, lode formation 4ft. wide is exposed containing a seam of galena 1in. to 2in. thick, and in the adjacent holes and along the surface for several feet in the vicinity specks and seams of galena are seen, which tend to show the probability of the occurrence of a fairly wide deposit of ore on this part of the block.

	Lead.	Silver.
Sample taken of the vein, 3in. wide in 4ft. hole, gave	48.4 %	2ozs. 10dwts.
Sample taken for 12in. in No. 2 hole, 3ft. deep, gave	17.4 %	1oz. 8dwts.
Sample of galena on surface at the two shafts	71.7 %	5ozs. 8dwts.
Sample from hole 3ft., $\frac{1}{2}$ mile farther S.	41.3 %	2ozs. 14dwts.

These samples show that the silver-lead ore on the property is of fairly high value. (7-5-15.)

THE NILTIBURY MINE, also known as "The Ivy Queen" (*vide* Record, page 64).—Sited about 9 miles N. from Blinman.

The old workings comprise a large open cut 96ft. long by 8ft. to 15ft. wide, in which is exposed a lode formation bearing N. 20° E., going down nearly vertically. The material consists of ferruginous claystone, limestone, and ironstone, with a little cuprite.

In the S. end of the cutting a shaft has been sunk (said to be down 70ft.), and near the N. end a shaft is down 40ft.; both shafts are now partly fallen in and covered with a large amount of debris, so there was no possible chance to examine the formation in the bottom workings. About 25ft. E. from the last open-cut work has been done in what appears to be a parallel formation for a length of 30ft. and 20ft. wide by 8ft. deep. The material disclosed in this is chiefly ironstone with copper stains. The party now holding the ground intend cleaning out and re-timbering the 70ft. shaft, with the object of sinking deeper. This I consider is the proper course to adopt.

Sample taken in the S. face of cutting gave 0.8 per cent. copper.

Sample taken in the N. face of cutting gave 0.1 per cent. copper.

Sample from lump of ore on surface (said to come from shaft) gave 47.4 per cent. copper and 11ozs. 18dwts. of silver per ton.

(7-5-15.)

THE BLACK EAGLE COPPER MINE (*vide* Reviews Nos. 9, 10, 12, 13, 16, 17, and 19).—Sited 1 mile S. from the Ediacara Mine.

The principal work now in progress is stoping out ore in the S. tunnel. A large body of ferruginous copper-bearing material is exposed containing boulders and bunches of ironstone and copper ore of fair average grade and about 4 tons of 15 per cent. ore are now stacked on surface.

The N. workings consist of an open cut E. and W. 30ft. long; in the face a large formation is exposed composed of siliceous ironstone, limestone, and quartz, with veins and bunches of copper ore, chiefly malachite. This is a promising ore channel, and appears likely to make a junction with the N. and S. deposit traversing the hill. A tunnel extended E. from the face of the cutting in the formation would be good prospecting work for the purpose of determining the width and value of the ore body in more settled country at a reasonable depth from the surface. (10-5-15.)

THE NICHOL'S NOB COPPER MINE (*vide* Record, page 28, and Reviews Nos. 9, 13, and 19).—Sited 10 miles N. from Paull's Mine.

At a point 270ft. along the line of lode S.E. a new underlie shaft was recently started, and is now down a total depth of 80ft. The ore channel disclosed is a true fissure lode strike N.W. and S.E., dip N.E. at an angle of 50°. The formation down the shaft is well defined, but within 80ft. of sinking three small breaks are noticeable in the country on different slate floors, shifting the ore channel on each 12in. to 24in. farther N.E. At the 41ft. level a drive in the lode has been extended S.E. a distance of 30ft., and the drive N.W. opposite is in a total distance of 35ft., where it has been connected with the other underlie shaft for ventilation.

The ore body in the drives and shaft consists of ferruginous quartz, calcite, and ironstone, with bunches of malachite and copper pyrites. This formation is visible in the different workings along the line of strike for fully half a mile in length, and the probability is that it will continue down to a great depth.

There are three parallel lodes on this block. At one point they are about 50ft. apart, but there are strong indications of them converging, going S.E., and appear likely to be much closer to one another in the vicinity of the present shaft, which has been sunk in the middle lode.

To further explore and test the various ore channels on this part of the property, the present shaft, which is 7ft. by 4ft. 6in. in the clear, strong, and in splendid order, equipped with runners and good ladders, should be continued down to water, probably a further depth of 20ft. to 30ft., and then extend crosscuts both N.E. and S.W. at the bottom. This would be good prospecting work, and the mine could be opened out and worked at a reasonable depth from the surface.

Sample taken for width of lode, 10in., in the bottom of the shaft, 80ft. level, gave 21.5 per cent. copper and 3dwts. gold per ton.

Sample taken W. drive for 12in., 41ft. level, gave 22.3 per cent. copper, and gold, a trace.

Sample from a small quantity of sulphide ore on surface at water shaft gave 18.6 per cent. copper and a trace of gold.

The lode formations so far disclosed in the different workings, from which a large quantity of rich ore has been from time to time extracted, are well defined and consist of calcite, quartz, and ironstone 10in. to 15in. wide, containing in places rich pockets and seams of copper ore. The future prospects of this property appear very promising. (10-5-15.)

THE COPPER QUEEN MINE (*vide* Reviews Nos. 9, 10, 13, 14, 18, and 19).—Situated 4 miles W. from Beltana.

The main working shaft on the property is now down a total vertical depth of 82ft. from surface, all strongly and securely timbered and equipped with good ladders, strong head gear and friction gear winding plant, driven by steam obtained from a vertical boiler.

The shaft was sunk in lode material from the surface to the 62ft. level; at that depth a fairly-defined footwall was intersected, dipping E. at an angle of 40°.

From the plat at 62ft. level a drive has been extended E. in low-grade formation for a total distance of 50ft.; in the face of this drive a winze has been sunk 20ft. in copper-bearing material. Driving E. is now in progress from the bottom of the winze, the drive is in a total distance of 21ft., and a drive off the last one S. 12ft. The formation disclosed in these workings consists of quartz and kaolin with specks and seams of copper carbonates in places for a width of fully 40ft.

Two samples taken for full width of drives, at 77ft. level, shows that the formation is of low grade.

No. 1, from face E. drive for 4ft., 77ft. level, 1.7 per cent. copper.

No. 2, from face S. drive for 3ft., 77ft. level, 0.8 per cent. copper.

(11-5-15.)

THE ELSIE ADAIR COPPER MINE.—Situated about 9 miles E. from Leigh's Creek.

A large amount of mining work appears to have been done at one time, and at one point a shaft has been sunk, said to be 165ft. deep. At the top of this shaft and in the adjacent open working a large formation is exposed, bearing E. and W. with a slight dip to the S., consisting of laminated clayslates, 4ft. to 8ft. wide, impregnated with particles of copper carbonates with thin veins of malachite and grey ore in the joints. At the time of my inspection no means were available to get down the shaft so as to ascertain the width and true nature of the ore channel at the bottom workings. The surface indications are favorable for a long length of copper-bearing formation along the line of strike. A short distance farther

S.W. a fair amount of mining work has been done by shallow pits and open cuts, in which wide bodies of carbonate ore are exposed. At the various old workings there are several hundred tons of discarded low-grade material which doubtless could be all made productive by a cheap method of treatment.

Lease No. 2252 (or "Holmes").—The mining work done some years ago on this block consists of one large open cut 20ft. deep and several shafts sunk at different points to depths of from 14ft. to 20ft. From the bottom of one shaft a drive has been extended E. a total distance of 120ft., and at one point near the shaft N. and S. drives have been extended in the deposit for a distance of from 15ft. to 20ft. In all these workings copper-bearing material, apparently of a considerable width, is exposed, consisting mainly of thin-bedded clayslates and sandstone impregnated with small seams and nodules of copper carbonates. This deposit of low-grade copper ore, as disclosed in the different workings, appears of great width for about 4 chains in length, with favorable indications that it will extend for a much farther distance along the line of strike. How far this large deposit will continue down can only be determined by deeper sinking. There appears to be enormous quantities of copper-bearing material on this block down to the present depth; the matrix in the various workings is of a soft and friable nature, and appears a likely material to treat by a leaching process, but doubtless a thorough test to discover the best method of treatment will be made prior to the erection of an expensive plant. Three samples taken gave the following results:—

No. 1, from block 10015 for 7ft. across bottom of drive, 20ft. level, 6.1 per cent. copper.

No. 2, from block 10015 for 6ft. face E. drive, E. shaft, 20ft. level, 4.1 per cent. copper.

No. 3, from block 10013, dump on surface, top of main shaft, 4.7 per cent. copper.

(12-5-15.)

THE DIAMOND JUBILEE COPPER MINE (*vide* Record, page 49, and Reviews Nos. 9, 13, and 19).—Situated about 10 miles E. from Leigh Creek.

At a point 90ft. in the E. drive from the tunnel a winze has been sunk in the main lode to a depth of 32ft. The lode formation disclosed consists of ferruginous quartz, with seams and bunches of malachite and grey ore.

No. 2 shaft, situated 30ft. W. from water shaft, has recently been cleaned out to a depth of 20ft., and the work of driving E. and stoping ore is now in progress, the lode is well defined and consists mainly of ferriacalcite, 18in. to 20in. wide, containing seams and pockets of fairly rich copper ore.

A sample taken for a width of 12in. at a depth of 8ft. gave 28.1 per cent. copper.

A sample taken from W. end of winze for a width of 9in. at 32ft. below tunnel level gave 21.6 per cent. copper.

The ore body, as shown by these samples, is of fairly high grade in both workings, and appears likely to go down to a greater depth. (13-5-15.)

THE MOUNT COFFIN COPPER MINE (*vide* Record, page 87, and Reviews Nos. 9, 13, 16, and 19).—Situated about 8 miles E. from Leigh's Creek.

About 12 chains W. from Prime's old workings a new underlie shaft in the main lode has recently been sunk to a total depth of 60ft. from the surface.

Work is carried on at present at the 22ft. level. A drive in the lode has been started and carried in W. 9ft.; the lode formation is 15in. to 18in. wide, with a 3in. vein of fairly high-grade copper ore on the hanging wall, and, as the other portion of the lode is discarded owing to low value, a large extent of ground has to be worked to obtain a fair-sized parcel of ore for market.

About 2 chains W. from the new shaft, two men recently put down a shaft to a depth of 14ft. The formation in this shallow pit is ill-defined, and two tons of ore on surface extracted from it appear to be of rather low value.

A sample taken for a width of 6in. in the face of W. drive, at 22ft. level, new shaft, gave 2.9 per cent. copper. (13-5-15.)

PAULL'S CONSOLIDATED COPPER MINE (*vide* Record, page 116, and Reviews Nos. 9, 13, 17, 19, and 20).—Situated about 27 miles from Leigh Creek.

At the 70ft. level in the main underlie shaft a drive in the lode has been carried in E. a total distance of 74ft. At a point 68ft. in this drive a winze has been sunk 80ft. At that depth it is holed through to the 150ft. level. From the 150ft. level a block of ground, 32ft. in length, has been stoped out for a width of 5ft. up to the 70ft. level, and these old stope workings have now been closely filled in with mullock. Work is now in progress on No. 2 block adjoining the winze. This stope is 33ft. in length, and has been carried up 56ft., with a pillar of ground left between the two stopes to keep the workings safe, and the side of the winze has been strongly timbered all the way up, leaving an open space of 4ft. along the breast of ground, this will enable work to be extended E. without disturbing the portion already worked. The ore body disclosed in the winze, drives, and stope workings is from 3ft. to 5ft. wide, containing malachite and copper glance.

A large quantity of good-grade ore has recently been extracted from these workings. The various parcels dressed and sent away by the present party, amounting to a total of 80 tons, gave an average yield of 20 per cent. copper, and the quantity of lower-grade ore discarded while dressing must amount to many hundreds of tons.

The formation in the present workings and E. of the winze (where a large block of ground is intact) appears highly promising, and likely to yield considerable quantities of good ore.

There are at present 20 tons of ore on surface, which can readily be dressed up to 25 per cent.

A sample taken of some of the rich ore in the dump, obtained at 94ft. level, gave by assay 43.9 per cent. copper.

A sample from face W. drive for 4ft., 94ft. level, 23.4 per cent. copper.

A sample from E. end of winze for 3ft, 94ft. level, 27.3 per cent. copper. (14-5-15.)

THE DORRIS FABIAN COPPER MINE (*vide* Reviews Nos. 19 and 20).—Situated E. of and adjoining the E. boundary of Paull's Consolidated Mine.

The main shaft has been sunk 42ft. vertical and 50ft. on the underlie. In the vertical portion of the shaft, between 30ft. and 40ft., a promising lode-formation 11ft. wide was intersected, containing seams of fairly high-grade ore. The underlie portion of the shaft was carried down in the formation to the present depth, and at the bottom a crosscut S. in the hanging-wall has been carried in a total distance of 30ft. in fairly hard ferruginous country rock.

The development so far on this part of the property is discouraging, as the formation in the shaft from 40ft. level down to present depth contains comparatively no values. A sample taken of the formation, for a width of 4ft. at 92ft. level, gave 0.4 per cent. copper.

An old underlie shaft, situated a short distance from the present workings, was recently cleaned out and sunk deeper. This has now been connected by a cross-cut at 20ft. level from main shaft. (15-5-15.)

THE UTICA COPPER MINE (*vide* Reviews Nos. 16, 18, 19, 20, and 21).—Situated in the hundred of Koorunga, 6 miles S.E. from the Burra Burra Mine.

The principal work carried on recently on this mine was confined to the 100ft. level in the underlie shaft. In the face of the S.W. crosscut, 31ft. in from the shaft, a winze in the lode was started; this is now down to a total depth of 17ft. The formation disclosed is chiefly quartz, 3ft. to 5ft. wide, with specks and small veins of malachite. A sample taken in the bottom, for a width of 3ft., gave 4.0 per cent. copper. No further work will be carried on at this level until the mine is adequately ventilated.

About half a mile E. work was done some years ago in a ferruginous lode formation, bearing N. and S., dipping E. An underlie shaft in the lode is down a total depth of 60ft. The lode matrix disclosed consists of quartz, calcite, and iron-stone, 2ft. wide, containing small bunches and veins of copper carbonates. A sample taken for a width of 2ft. in the bottom of the shaft gave 5.1 per cent. copper. This ore channel appears fairly defined, and likely to continue down.

About 90ft. E. from the underlie a vertical shaft, 6ft. by 4ft. in the clear, is down a total depth of 63ft., strongly timbered for about 25ft. from the surface, and the shaft appears in good order down to the bottom. With a view of further testing the ore channel exposed in this part of the block this vertical shaft will now be equipped with windlass and ladders, and further sinking done to intersect the formation and carry on exploration work in it at greater depth. (19-5-15.)

LOCALITY—SOUTH.

THE MOUNT MALVERN SILVER-LEAD MINE (*vide* Record, p. 183, and Reviews Nos. 8, 9, 18, 19, 20, and 21).

The principal work at present is confined to the 306ft. level in the main shaft, where driving E. and W. on the course of the lode is now in progress.

306ft. Level.—Here a fair-sized plat has been made, and a crosscut from the plat has been carried in S., intersecting the main lode 40ft. from the shaft.

The drive E. on the course of the formation is in a total distance of 190ft. At a point 90ft. in the drive a rise has been put up and connected with a winze sunk from the 214ft. level. From the bottom of the rise up for 12ft. a vein of galena 2in. to 6in. wide is showing. At 40ft. up the rise in the E. stope over the back of the E. drive the formation is 5ft. wide, containing seams of galena.

At a point 155ft. in the main E. drive a crosscut has been driven in the hanging wall for a distance of 22ft. At 3ft. in a seam of galena 12in. wide was intersected: this is probably the same run of ore as that showing in the rise, and is part of the main lode channel, which appears fairly wide from the rise to a point past the crosscut, and when worked in a body from wall to wall should yield a large quantity of milling material containing a high percentage of lead and silver ore. In the face of the E. drive the formation is 4ft. wide. This drive should be continued E. to intersect the shoots of ore operated on in the higher levels from Harvey's and the other underlie shaft.

306ft. Level.—The W. drive is in a total distance from the main crosscut of 240ft. At 27ft. in, where a little stoping has been done, the formation exposed is 5ft. wide of barytes, with a nice seam of galena 6in. to 8in. thick on the hanging wall; this appears a very promising shoot of ore 18ft. to 20ft. in length, and is probably the same run of ore as that showing at 214ft. level, in which No. 1 W. winze was sunk to a depth of 36ft. At a point 130ft. in the W. drive fairly good milling ore is showing in the back of the drive for some distance, the formation is 3ft. to 4ft. wide, containing several small seams and bunches of galena.

At a point 160ft. in the drive a rise has recently been put up and is connected with No. 2 winze sunk from the 214ft. level. At 25ft. up the rise some stoping has been done E. and W. for a distance of 4ft. to 7ft.; the ore body disclosed here is fully 8ft. wide, closely impregnated with silver-lead ore. The lode formation exposed in this rise from level to level, at this point, is from 5ft. to 8ft. wide, containing fairly high values in silver and lead ore, and the lode matrix is of a highly favorable nature for concentrating, with fair prospects of large quantities being available for stoping out in this part of the mine.

In the drive W. from the rise for a length of 30ft. the portion of the formation exposed shows specks and small seams of galena for a width of 1ft. to 3ft. in different places along the drive. From a point 195ft. to the face the drive has been chiefly in country rock, with soft seams 9in. wide of decomposed rock on the S. side, carrying no values. It is quite probable that portion of the ore channel is on either side

of the present drive. To determine if that is the case, a few test crosscuts extended short distances into the walls at different points should be made, and if a productive run of ore be discovered it would be of great assistance for extending the workings W. in the future.

The development in this mine at the present depth is of a very promising nature as a number of fairly long shoots of ore, rich in lead and silver, are being disclosed in the various workings, which should, when operated on from the 306ft. level to the surface, yield very large quantities of good milling ore, enough to keep a moderate size concentrating plant going for a considerable time.

Water Supply.—This can be obtained from the present main shaft. The quantity making in the shaft is about 10,000galls. per 24 hours. If this amount is found to be inadequate for the work carried on it could be increased considerably by providing a conservation and settling pit, so that the water could be pumped back and re-used by the plant.

Eighteen samples were taken, so as to show the value of the various classes of ore in the different shoots throughout the mine, and, as the galena veins are of a fairly compact nature, a fair quantity of high-grade ore could be selected from the crude lode material prior to mill treatment—

- Sample No. 1.—Face E. drive, intermediate level, 266ft., lode 5ft. wide, gave 20.1 per cent. lead, 0.3 per cent. copper, 3ozs. 2dwts. silver per ton.
- “ No. 2.—Vein of galena in face of drive, 9in. wide, 266ft. level, 50.3 per cent. lead, 8ozs. 8dwts. silver per ton.
- “ No. 3.—N. crosscut, 306ft. level, off E. drive, vein of galena 12in., 64.2 per cent. lead, 11ozs. silver per ton.
- “ No. 4.—Main lode at a distance of 155ft. in E. drive, 306ft. level, 5ft. wide, 1.8 per cent. lead, 1.1 per cent. copper, and 4ozs. 2dwts. silver per ton.
- “ No. 5.—Main lode at 115ft. in E. drive, 306ft. level, 6ft. wide, lead nil, 1.6 per cent. copper, 2ozs. silver per ton.
- “ No. 6.—Main lode, face of E. drive, 306ft. level, 4ft. wide, nil.
- “ No. 7.—Main lode, 27ft. in W. drive, 306ft. level, for a width of 5ft., 8.0 per cent. lead, 2ozs. 4dwts. silver per ton.
- “ No. 8.—Galena vein 6in., at 27ft. in W. drive, 306ft. level, 64.0 per cent. lead, 12ozs. 12dwts. silver per ton.
- “ No. 9.—Main lode, 2ft. wide, at 85ft. W. drive, 306ft. level, lead nil, 1.3 per cent. copper, 6ozs. silver per ton.
- “ No. 10.—Main lode, 4ft., at 130ft. in W. drive, 306ft. level, 22.0 per cent. lead, 4ozs. 10dwts. silver per ton.
- “ No. 11.—Main lode 4ft., at 175ft. in W. drive, 306ft. level, lead nil, 4.9 per cent. copper, 4ozs. 10dwts. silver per ton.
- “ No. 12.—Main lode 9in. wide, at 240ft. in W. drive, 306ft. level, 1oz. 12dwts. silver per ton.
- “ No. 13.—Main lode 9in. wide, face of W. drive, 306ft. level, showed no value.
- “ No. 14.—At 25ft. up W. rise (lode 8ft. wide) taken for 4ft., 36.9 per cent. lead, 0.4 per cent. copper, 4ozs. silver per ton.
- “ No. 15.—At 25ft. up W. rise, foot wall portion, for 4ft., 0.2 per cent. lead, 5 per cent. copper, 5ozs. 4dwts. silver per ton.
- “ No. 16.—Top of winze, main lode 5ft. wide, 214ft. level, 36.0 per cent. lead, 10ozs. 14dwts. silver per ton.
- “ No. 17.—Ore dump from rise, 28.3 per cent. lead, 0.2 per cent. copper, 5ozs. 14dwts. silver per ton.
- “ No. 18.—Ore dump from rise, 25.2 per cent. lead, 0.6 per cent. copper, 6ozs. 12dwts. silver per ton. (31–3–15.)



Lake Fowler, Y.P., from the East.



Lake Fowler, Y.P., from the North.

THE FEDERAL GOLD MINE (*vide* Record, page 216).—Situated on section No. 5186, hundred of Onkaparinga, $2\frac{1}{2}$ miles N.W. from Woodside.

Intermittent mining and prospecting work has been done over a considerable area at different points in the auriferous belt of country traversing this property.

From a point at the foot of a small hill rising about 70ft. above the gullies an adit has been carried in E. for a distance of 170ft. The material exposed consists mainly of friable sandstone, with irregular seams of siliceous ironstone, bearing N. and S., conformably with the strike and bedding of the country rock. The iron veins and portion of the friable material in proximity appear of a very promising nature for containing fine gold.

At a point 60ft. in the tunnel a drive has been extended N. 18ft. In the face of this drive three ferruginous veins, each 2in. wide and from 12in. to 15in. apart, are exposed. The S. drive opposite is in 3ft.; the material showing in the face is chiefly friable sandstone with a small iron vein 2in. wide.

At different points on the hill above the tunnel three shafts are down to depths of 27ft., 40ft., and 83ft. respectively, and it is evident that a fair amount of mining work has been done in each shaft, but no work has been carried on for some years, and the lower workings are at present inaccessible.

There are surface indications of several gold-bearing formations traversing the property N. and S., with others crossing them diagonally, and at one point on the hill where two of the lodes junction a hole is down 5ft., showing ferruginous lode material 4ft. wide. About 5 chains farther N. near the boundary line a shaft has been sunk in similar lode material to a depth of 30ft.

On an adjoining hill half a mile N. from the Federal Mine a large amount of prospecting work has been done for a considerable distance by shallow pits at different points, and two shafts 15 chains apart are down to depths of 25ft. and 30ft. respectively. In these workings ferruginous sandstone and quartz likely to carry gold are disclosed, varying in width from a few inches to 2ft. and 3ft.

Some prospecting work has been done on sections Nos. 5180 and 5181, near Mr. G. Dyer's house. In one hole sunk to a depth of 5ft. the junction of two ferruginous quartz reefs is exposed, one of them bearing N.E. crossing the N.W. reef at right angles, both going down nearly vertical and well defined and strong, likely to continue to a great depth. These reefs appear very promising for carrying gold and are well worth more work being done to further prove them along the lines of strike.

Federal Mine.—Five and a half tons of lode material treated at Mount Torrens Cyanide Works gave by battery treatment 10dwts. 2grs. gold per ton and 10dwts. by cyanide, and a parcel of $7\frac{1}{2}$ tons gave a return of 6dwts. gold per ton. Along the surface and in the various shallow workings at different points the indications are favorable for the occurrence of gold-bearing formations, likely to prove more defined and wider at depth in the more settled country. The prospects on the different properties, as shown by the 15 samples taken, are of an encouraging nature :—

		Gold per Ton.
Nos. 1 and 2.	Samples from shallow hole near Dyer's house	Trace
No. 3.	Taken from a point 60ft in tunnel	1dwt.
No. 4.	" S. side of tunnel, vein 3in.	Trace
No. 5.	" 40ft. in tunnel, vein 6in. wide	5dwts.
No. 6.	" outcrop near 40ft. shaft	Trace
No. 7.	" hole 5ft. deep, on top of hill, formation 4ft.	5dwts.
No. 8.	" N. section, surface dump at 30ft shaft	10dwts.
No. 9.	" N. section, surface dump 20ft. from shaft	12dwts.
No. 10.	" $\frac{1}{2}$ mile N. from Federal workings, dump 30ft. shaft	Trace.
No. 11.	" $\frac{1}{2}$ mile N. from Federal workings, hole 4ft. deep	7dwts.

		Gold per Ton.
No. 12.	Taken from $\frac{1}{2}$ mile N. from Federal dump, 25ft. shaft...	17dwts.
No. 13.	" $\frac{1}{2}$ mile N. from Federal dump, 25ft. shaft..	Trace
No. 14.	" surface dump, Federal shaft, 27ft. deep....	13dwts.
No. 15.	" surface dump, Federal shaft, 40ft. deep....	2dwts.

(12-4-15.)

THE KANMANTOO COPPER MINE (*vide* Record, page 66, and Reviews Nos. 17 and 18).—Situated on sections 8 and 9, hundred of Kanmantoo; 120 acres are held for mining purposes.

Five copper-bearing lodes traverse the block in a N. and S. direction and one E. and W.

A large amount of mining work has been done at different points along the line of strike by open-cutting and shaft-sinking in the various formations and, judging by what can be seen in different stopes, carried up to the surface, the lode material appears to be of great width, varying in places from 5ft. to 20ft., and, considering the large amount of work done in the various channels, some hundreds of tons of copper ore must have been extracted from the workings.

At one point at the foothill an adit has been carried in a total distance of 450ft. In this the "Spitfire" and "Kangaroo" lodes were intersected, and drives on the courses of these lodes were carried in both N. and S. and a large amount of stoping done over the drives, up to the surface in places.

Within a distance of 220ft. W. of the extreme end of the tunnel, or adit, there are three other copper-bearing lodes (the Quarry, Roper's, and Cross lodes), in which a fair amount of work has been done to shallow depths, and it appears that large quantities of good ore were extracted.

To further prove and work these promising formations at reasonable depths the tunnel should be extended westward. This would be good prospecting work, and would be of very great assistance in selecting a site for a main shaft, so that more than one lode could be worked from it with as little cross-cutting as possible. (29-4-15.)

THE GIBRALTER PYRITIC MINE.—Situated in the hundred of Kanmantoo, 3 miles S.W. from the township of Nairne; the mineral holding covers an area of 160 acres.

A large pyritic formation traverses this property in a N. and S. direction with a slight dip to the E. It can be traced on the surface for over a mile in length, and in places it shows a width of 100ft.

Some 30 or 40 years ago a fair amount of mining work was done by open-cut and tunnelling. On the E. side of the hill a tunnel 6ft. 6in. by 4ft. has been carried in W. for a distance of 150ft. The large quantity of pyritic ore extracted from these workings was used for flux at the old Scott's Creek Smelting Works.

An Adelaide syndicate recently acquired the property and is now carrying on vigorous development work to prove the width and full extent of this promising deposit.

At the foot of the hill open-cut work is in progress. No. 1 working is 9ft. long, 8ft. wide, and 10ft. deep. All the material exposed in this opening, and for about 70ft. W., is densely impregnated with pyrites. No. 2 working is down 4ft. in similar material, which at this point shows a width of fully 100ft. Four samples taken of the ore in the workings and surface dumps gave 26.2 per cent., 23.8 per cent., 41.0 per cent., and 15.0 per cent. sulphur respectively. (29-4-15.)

LOCALITY—NORTH-EAST.

THE GOLDEN JUNCTION GOLD MINE (*vide* Record, p. 219, and Reviews Nos. 19, 20, and 21).—Situated near Mount Grainger.

The property comprises two gold leases, Nos. 1516 and 1547, and a large amount of good mining work has been done in shaft-sinking at different points on the blocks.

On lease No. 1516, at a point 70ft. above the gully is situated the main vertical shaft, 12ft. by 4ft. 6in. in the clear, close timbered with jarrah and divided into three compartments, one of which is equipped with good, strong ladders, and proper stagings put in 30ft. apart. The shaft is down a total depth of 163ft., and at that depth a crosscut has been extended in a S. direction for 18ft., intersecting a lode formation of ferruginous clayslate with small iron veins 2ft. 6in. wide. Off the crosscut a drive in the formation N.E. has been extended 24ft.; from that point a crosscut has been carried in S. 30ft., and a crosscut opposite the last has been extended N. 39ft. At a point 12ft. in a winze has been sunk in ferruginous slate and ironstone seams to a depth of 30ft.; the winze is now partly filled in with mullock.

At the 150ft. level, main shaft, a fine large plat has been made, and a crosscut from the plat is in a total distance of 57ft. S.E. The lode was intersected in this crosscut 20ft. from the shaft; driving in the formation has been done N.E. for a distance of 37ft. At a distance of 5ft. in this drive a connection was made with the bottom of the old underlie shaft sunk in the early days of the mine. Opposite the last workings a drive in the formation has been carried in S.W. a distance of 22ft. The material at both the 163ft. and 150ft. levels in the present workings consists mainly of ferruginous clayslate, with ironstone veins, and does not appear to contain any value at the different places where sampled.

A few chains from the main shaft an underlie shaft was sunk some years ago in what appears to be an ill-defined and irregular vein of ore, which was followed down on the underlie to a depth of 170ft. (or 150ft. vertical), the ore obtained from the vein in sinking was fairly rich in gold, and, it is said, paid for all the work done and gave the shareholders a fair amount in dividends.

The present holders of the property had recently some stoping done at 60ft. level in the old underlie shaft, and 48 tons of ore were extracted from the workings, which, on treatment at the Government Cyanide Works, Petersburg, gave a return by battery and cyanide of loz. 2dwts. of gold per ton. This gold yield for such a large parcel is very encouraging, and should the same run of ore be located at the 150ft. main shaft a large block of ground would be made available for stoping out from that level to the surface.

No. 2 Underlie Shaft, situated at the foot of the hill, is now down a total depth of 36ft., and sinking is in progress. The formation disclosed is ill-defined, and consists of quartzite, quartz and iron veins, 3in. to 4in. thick, carrying gold.

No. 3 Underlie Shaft, about 1 chain farther S., is down a total depth of 20ft. the vein of ore exposed is chiefly ferruginous quartz, 3in. to 6in. wide, carrying gold;

Near the top of the hill, 3 chains from the last workings, prospecting is in progress. the pit is now down 4ft. on a vein of quartz 3in. to 6in. wide, carrying little gold.

THE BUTTAMUC GOVERNMENT WELL is situated at the foot of the Golden Junction hill, on the bank of a small creek, 150yds. E. from the main vertical shaft—the difference of surface level of the two shafts is 63½ft. This well was sunk many years ago in a soft deposit of clay slate and micaceous ironstone to a depth showing at present of 220ft., and at one time was used solely by the public for water supply, but of late years little or no use has been made of it, and the water is now at its normal level, 180ft. from the surface, with 40ft. of water in the well. The well from the surface down to the 160ft. level is in very good order, but the 20ft. from that point to the water level will require retimbering, so as to make the well in good order to water level.

In what state the wall timbers are in the 40ft. below water level there is no possible way of finding out at present, but a bucket attached to a rope was let down to the bottom and was pulled up without any trouble.

About 136 tons of lode material extracted from the different workings are stacked on the surface. Eighteen bulk samples were taken of the lode in different parts of the workings and the ore dumps, which on assay gave the following results:—

				Gold.
No. 1.	Main shaft, 163ft. level,	S. drive, lode 2ft. 6in.	.....	Nil
No. 2.	"	"	E. drive, lode 4ft.	2dwts.
No. 3.	"	150ft. "	S.W. drive, lode 12ft.	Trace
No. 4.	"	"	face S.W. drive, lode 3ft.	Nil
No. 5.	"	"	face N.E. drive, lode 3ft.	Nil
No. 6.	"	"	finer bottom underlie.....	5dwts.
No. 7.	"	"	N.E. drive, lode 3ft.	Nil
No. 8.	Underlie shaft, 120ft. level,	lode 2ft.	.....	Trace
No. 9.	Underlie shaft, 60ft.	" lode 3ft.	.....	Trace
No. 10.	Underlie shaft, 60ft.	" lode 4ft.	.....	Trace
No. 11.	No. 2 shaft, 36ft. level,	lode 2ft.	.....	7dwts.
No. 12.	"	20ft. " lode 2ft.	.....	5dwts.
No. 13.	"	dump 20 tons	.....	4dwts.
No. 14.	No. 3 shaft, 20ft., vein 6in.		.....	4dwts.
No. 15.	"	dump 12 tons	.....	8dwts.
No. 16.	Old underlie, dump 100 tons		.....	2½dwts.
No. 17.	"	dump 4 tons	.....	8dwts.
No. 18.	Prospecting hole, 4ft., vein 12in.		.....	4dwts.

(10-2-15.)

THE JUNCTION GOLD MINE.—One 20-acre lease adjoining the N. boundary of the New Mount Grainger Gold Mine.

The principal mining work done on this property is the sinking of an underlie shaft, which was started in the bed of a large creek that traverses the block, and is the main water channel of the district. The rain of a few weeks ago made the creek a running stream, overflowed the top of the shaft, which is 93ft. in depth, filled it with water, and also carried in a large amount of debris; and the ore obtained in sinking was carried down the creek, except a parcel of 2 tons, which was treated at the Petersburg Cyanide Works and gave a return of 11dwts. of gold per ton. To further prove and work this vein of ore, which appears fairly defined on surface, but very small, averaging only about 4in. wide, a new shaft should be started at a point 3 chains N. of the present one, where the ground is high and out of flood danger.

A sample taken of the vein 3in. wide at 20ft. down the shaft gave 2½dwts. of gold per ton, and a sample taken of vein 9in. in 4ft. hole gave trace. (12-2-15).

THE MYRTLE GOLD MINE, also known as "The Dustholes" (*vide* Record, p. 214, Reviews Nos. 8, 13, 14, 15, 16, 17, 21, and Geological Survey Report No. 2).—Situated 2 miles W. from Mount Grainger.

A fairly strong company has recently been formed to develop and work this property and to erect the necessary plant to treat the ore on the mine.

A large ferruginous formation, consisting of quartzite, quartz, and iron veins carrying gold, traverses these blocks. A fair amount of prospecting work by open cuts, shallow pits, and drives has been done at different times along the outcrop, and at one point a shaft on the underlie has been carried down to a depth of 100ft.

The formation as disclosed in the various workings is from 10ft. to 20ft. wide, bearing N.E. and S.W. with a slight dip to the N.W., and can be traced for a considerable distance on the surface.

It appears quite possible that a large amount of mining work could be done in this formation by open cut work, as fully 100ft. of backs would be available at several points above the foot of the hills, but in working a lode of this nature, which

apparently is of low grade, a careful system of sorting out the barren rocks will be necessary to obtain a fair grade ore, and, considering the size of the formation, there should be no difficulty in keeping a fairly large plant going for several years with material obtained from the open workings.

Several parcels of ore obtained from the different workings along this line of lode have been treated at different times at the Petersburg Cyanide Works, which gave a return by battery and cyanide of from 6dwts. to 15dwts. of gold per ton.

The prospects of this property, if worked in a systematic manner, appear promising, and, judging by the lay of the country and the depths at which other mines and wells in the district cut the water, it appears to me quite likely that a supply of water for a plant could be obtained on the Myrtle property by sinking about 100ft. in the vicinity of the formation at a point near the present camp.

Eight samples taken from various workings gave on assay the following results :—

No. 1, from N. working, 10ft. deep, for a width of 3ft.	Nil
No. 2, “ tunnel, quartz, for a width of 2ft.	Trace
No. 3, “ top of hill, for a width of 2ft.	3dwts.
No. 4, “ dump of ore on top of shaft.....	28dwts.
No. 5, “ Gordon shaft, 30ft. level, vein 3in.	1½dwts.
No. 6, “ Gordon shaft, 100ft. level, vein 12in.	1½dwts.
No. 7, “ N. end No. 2 lease, for a width of 13ft.	2½dwts.
No. 8, “ No. 2 workings on No. 3 lease, vein 6in. to 10in. ...	14dwts.

(12-2-15.)

McCallum's Gold Claims.—Situated at the Dustholes, adjoining the Myrtle Gold Mine on the S. side.

Vigorous prospecting work is in progress on this property consisting of several open-cuts and shafts. Two shafts are now down 15ft. and 35ft. respectively, and some driving done in the lode from each.

The formation carrying gold is similar to that on the Myrtle property and is doubtless the continuation S.W. of the same formation. It shows considerable width, consisting mainly of layers of quartzite of ferruginous nature with quartz and ironstone veins 3in. to 12in. wide. The ironstone veins appear to carry the largest portion of the gold.

The prospects so far, in the present shallow workings, are of a promising nature. A sample taken from a vein 12in. wide in the N. workings gave by assay 16dwts. of gold and 10dwts. of silver per ton, and a sample taken from the veins in the S. workings 2ozs. 7dwts. of gold and 5dwts. silver per ton. (12-2-15.)

The Myrtle Extended Gold Claim.—Situated at the Dustholes and adjoining the S. boundary of McCallum's Mine.

The Dustholes line of lode showing along the surface for over a mile in length, and now worked at different points in the adjoining mines (Myrtle and McCallum's), appears to traverse this property. The outcrop is fairly prominent, and can be traced for the full length of the block.

Prospecting along the line of strike is in progress by open-cuts and shaft-sinking. Two of the shafts are now down to depths of 15ft. and 18ft. respectively, and the lode material disclosed in the various workings is chiefly ferruginous quartzite, with numerous cross seams of quartz and ironstone veins 3in. to 9in. wide. Some of the latter are fairly defined and strong, but at the present depth they do not appear to carry much value. Four samples taken from different veins gave, on assay, only traces of gold. It is quite possible that other veins crossing the formation not yet prospected may be found to contain better values. (13-2-15.)

THE MALTESE CROSS OCHRE MINE (*vide* Review Nos. 8, 9, 11, 14, 17, and 19).—Situated near Oodla Wirra.

A fairly large deposit of ferruginous material and ironstone is exposed on the surface of this property, in which a considerable amount of good prospecting work has been done at different points, and two vertical shafts, 30ft. apart, have been sunk to depths of 75ft. and 100ft. respectively.

No. 1 shaft, 75ft. deep. Work has been done in this shaft down to the 30ft. level, where several drives have been extended to distances of from 10ft. to 30ft. in different directions following the course of irregular seams of ochre, varying in thickness from a few inches to 2ft. or 3ft. The ochre seams have been worked on in both the stopes and drives to points where they pinched out or became so small as to become nonpayable and, as already proved in the deeper workings, the ochre does not appear to continue down. The largest portion of the ochre extracted from the mine was obtained from the workings above the 30ft. level.

No. 2 shaft, situated 30ft. E. of No. 1, is down a total depth of 100ft. At the 28ft. level a drive has been extended W. a distance of 27ft., and is connected by a crosscut put in S. from No. 1 shaft. This makes the ventilation good in the workings of both shafts. The vein of ochre operated on in these workings appears to have been from 1ft. to 3ft. wide, and has all been stoped out. A crosscut has been driven S. a distance of a few feet from the shaft, and in the face a winze has been sunk a distance of 30ft. and is connected with the 64ft. level. The material disclosed in the winze is chiefly decomposed rock and ironstone.

Sixty-four feet level. A large amount of driving and crosscutting has been done in different directions, with a view apparently of exploring the ground thoroughly at this level for further deposits of ochre. From the bottom of the shaft a drive has been extended W. 30ft., and from near the face drives are in S. 12ft. and N. 10ft.—this N. drive has been connected with No. 1 shaft. Off the W. drive, 10ft. from the shaft, a crosscut has been put in N. 15ft., and off the crosscut a drive E. is in 12ft. From the E. end of the shaft a crosscut has been extended N. 24ft. The material exposed in all these workings consists chiefly of decomposed ferruginous clayslate with isolated bunches of ironstone. The absence of any ochre is discouraging, as it proves that the deposit operated on in the higher levels does not continue down.

Judging by what can be seen in the present workings the ochre deposit worked proved to be a shallow belt and confined to a small area adjacent to the two shafts, outside of which none has been found, and the development so far in the lower workings of the mine amply proves that there is very little prospect of discovering other deposits of ochre by deeper sinking at this point on the block.

There is a fairly large portion of the holding on which no work has been done : the surface indications are promising, and it appears quite likely that by doing some prospecting work on it there is a reasonable chance of discovering new deposits of ochre.

Five samples taken of the ochre veins showing in different parts of the workings gave, on assay, the following results —

No. 1. From No. 1 shaft, 11ft. level, vein 6in., 80·1 per cent. ferric oxide and 2·9 per cent. insoluble matter.

No. 2. From No. 2 shaft, 28ft. level, vein 8in., 15·9 per cent. ferric oxide and 71·3 per cent. insoluble matter.

No. 3. From No. 2 shaft, 28ft. level, vein 9in., 37 per cent. ferric oxide and 44·3 per cent. insoluble matter.

No. 4. From No. 2 shaft, 64ft. level, taken from the backs and faces of all the 28·7 per cent. ferric oxide and 58·3 per cent. insoluble matter.

No. 5. From No. 2 shaft, 64ft. level, vein 8in., winze, 71·7 per cent. ferric oxide and 12·1 per cent. insoluble matter.

(16-3-15.)

COMMONWEALTH GOLD MINE.—Situated on sections 93 and 112, hundred of Parnaroo, about 9 miles E. of Ucolta.

A large quartzite formation traverses this property in a N. and S. direction, having a slight dip to the E.

Some years ago a Wallaroo syndicate did a fair amount of prospecting work at different points along the line of strike of the formation. Several shallow holes appear to have been sunk to various depths and some driving done. The material exposed in the old dumps is chiefly quartzite and ferruginous quartz with pyrite.

Recently this property was acquired for further mining purposes by Mr. E. E. Hennig and party. Since starting work, a main shaft, 6ft. x 4ft. in the clear, has been sunk in the formation to a depth of 24ft. The ore channel disclosed down the shaft has two defined walls 4ft. apart, and the material between consists mainly of quartzite, with quartz and ironstone veins 2in. to 6in. wide carrying gold. Two samples taken of the veins showing in the bottom of the shaft gave on assay—No. 1, 2ozs. 2dwts. of gold; and No. 2, 4dwts. of gold per ton. The prospects at the present level are of an encouraging nature, as it is quite possible that the gold-bearing veins will improve in width as greater depth is attained. (17-3-15.)

THE CLAYTON EVAN GOLD MINE.—Situated 8 miles from Mannahill to the E. and adjoining the E. boundary line of the Homeward Bound Gold Mine.

Some surface prospecting work has been done in different places, and at one point what appears to be the continuation E. of the Homeward Bound lode has been disclosed. In this an underlie shaft has been started and sunk to a depth of 10ft. The lode formation exposed in the bottom of the shaft consists of ferric calcite and quartz, 4in. to 6in. wide, carrying gold. A sample taken of the lode in the bottom of the shaft gave by assay 4dwts. of gold and traces of silver and bismuth.

The prospects of this new venture are promising, as it is quite possible that rich ore will be disclosed in the lode at greater depth. (19-3-15.)

THE HOMEWARD BOUND GOLD MINE (*vide* Record, page 245, and Reviews Nos. 9, 11, 14, 15, 18, 19, 20, and 21).—Situated about 8 miles N.W. from Mannahill.

Some work is in hand at different points along the line of lode traversing this property. A short distance S. of the outcrop three vertical shafts have recently been sunk. Morgan's No. 1 shaft is down a total depth of 18ft.; at the bottom a drive S. is in 7ft., the lode disclosed is 6in. to 18in. wide of ferruginous calcite, carrying gold. No. 2 shaft is down 23ft., about 5ft. more sinking at this point should intersect the lode.

No. 3 shaft is down a total depth of 30ft., at which depth the lode was intersected, a drive from the bottom was carried in S. 70ft. and a drive E. 45ft. These workings have now fallen in and could not be examined, but Mr. Morgan, the owner, informed me that the lode operated on was from 2ft. to 3ft. wide, and that the last $7\frac{1}{2}$ tons of ore obtained from the drives treated at Petersburg Cyanide Works gave a return of 1oz. 8dwts. of gold per ton.

Work is in progress at present a short distance W. from No. 2 underlie shaft, where a new opening has been made and carried down to a depth of 15ft., and a drive made W. 4ft. The lode disclosed in the workings is from 9in. to 12in. wide, carrying gold associated with bismuth. A parcel of 5 tons to 6 tons of ore has just been dispatched from these workings to the Petersburg Cyanide Works, and it is anticipated that it will yield about 2ozs. of gold to the ton.

Near the W. boundary line Jones' underlie shaft is down a total depth of 45ft.; at that depth a drive has been extended S.E. 20ft.—the lode exposed here consists of ferric calcite carrying gold and bismuth. The first parcel of ore extracted in sinking from near the outcrop, amounting to 5 tons 7cwts., gave a return of 9dwts. of gold per ton. There are now 3 tons of ore at surface ready for next parcel, which appears very good stone, containing gold and bismuth. A sample taken of the lode at 45ft. level gave on assay 2ozs. 6dwts. of gold per ton.

The lode for the depths tested in the different underlie shafts and along the line of strike, where worked at places for a length of over 40 chains, is of a defined nature, varying in width from 6in. to 18in., consisting mainly of ferricalcite, with quartz containing patches and shoots of rich gold associated with bismuth, and, as proved by samples taken, Morgan's workings are in a rich run of ore at present.

Sample taken of the lode 9in. in the face of the drive at 15ft. level gave 11ozs. 10dwts. of gold, 1oz. silver, and 0·3 per cent. bismuth.

Discarded lode material on surface, 3dwts. gold.

Ferruginous quartz on top of No. 1 shaft, 2dwts. gold.

Quartz and gossan from No. 3 shaft, 2ozs. 12dwts. of gold, 0·2 per cent. bismuth.

Lode 15in. wide at 190ft. level, No. 2 underlie shaft, 1oz. 1dwt. gold and 0·1 per cent. bismuth. (19–3–15.)

THE GREAT EASTERN GOLD MINE, Wadnaminga (*vide* Record page 322, and Reviews Nos. 15, 20, and 21).

A cyanide plant has recently been erected to re-treat the large dump of old tailings stacked on the property. The plant consists of three 15-ton and three 30-ton vats, with necessary pipe fittings. One zinc box and a modern assay plant complete are housed in a substantial building, also two liquor tanks with pump attached driven by an oil engine.

The *Water Supply* is obtained at a distance of half a mile from the plant in a well at 58ft. from the surface. The well is equipped with a pumping plant driven by an oil engine, which pumps the water through a line of pipes from the well to an elevated tank near the vats; from that point the water gravitates through pipes to all parts of the works. The whole plant appears to be doing good work, and is treating 120 tons of sand per week. The company is at present negotiating for other machinery, with a view of equipping the mine with a battery, and the manager anticipates that in a few months time things will be in a fair way to commence vigorous mining work on the property. (20–3–15.)

THE NEW MILO GOLD MINE, Wadminga (*vide* Record, page 322, and Reviews 10, 11, 14, 15, 18, 19, 20, and 21).

In the main underlie shaft at the 370ft. level the work of stoping out the ore in the face of the W. drive is in progress. The stope has a face of 30ft. in length along the line of lode, which is well defined, consisting of quartz with iron pyrites, iron oxide carrying a fair amount of gold.

Four samples taken of the ore for full width of lode from different parts of the stope gave the following results on assay:—

No. 1. N. end, lode 2ft., 2ozs. 9dwts. gold and 2ozs. 7dwts. silver.

No. 2. W. face, lode 2ft., 13dwts. gold and 4ozs. 1dwt. silver.

No. 3. S. face, lode 2ft., 15dwts. gold and 1oz. 16dwts. silver.

No. 4. E. face, lode 2ft., 2ozs. 2dwts. gold and 8dwts. silver.

The persistence and width of the ore channel at this depth in the mine, 370ft. on the underlie, are very encouraging, and favorable indications that the good ore now disclosed in the lode will continue down to much greater depths. (20–3–15.)

THE VIRGINIA GOLD MINE, Wadnaminga (*vide* Record, page 322, and Reviews Nos. 14, 15, 16, 17, 18, and 21).

The five-head battery on this mine is working eight hours a day crushing ore obtained from the company's new block of ground, The Thunder Queen. Last month 150 tons of ore were carted from the new lode and treated by battery, which, judging by the amount of amalgam on the battery tables, should give a fairly high return.

The cyanide plant is working continuously treating the old sand dump and new tailings made, and up to date 4,025 tons of tailings have been treated for a return of 900ozs., worth £1,794 1s. 2d. (20–3–15.)

THE THUNDER QUEEN (*vide* Review No. 21).—A fair amount of good development work has recently been done. A well-defined lode formation, 2ft. to 2ft. 6in., of exceedingly promising nature traverses this block in an E. and W. direction dipping S. The lode matrix consists of ferruginous quartz, schist, with cerussite, galena, and ironstone carrying high values in gold. At one point on the property an underlie shaft, 6ft. x 4ft. in the clear, has been sunk in the formation to a depth of 70ft. The shaft is equipped with horse whip and iron tramline from bottom up to landing brace. Everything appears in good order for proving the ore body to a reasonable depth prior to the erection of more expensive plant.

Fifty Feet Level Underlie Shaft.—A drive has been extended E. in the lode 40ft., and stoping is now carried on up from the back of the drive. The drive W. on the course of the lode is in a total distance of 36ft. The lode in both these workings is 2ft. wide carrying good gold.

Seventy Feet Level.—The drive E. at this level, on the course of the lode, is in 30ft., and the drive W. opposite is in a total distance of 50ft. At a point 30ft. in this drive a break in the country crossed the ore channel in a N. and S. direction, making an upthrow going W. of 2ft. in the lode; but these small breaks or faults are in no way detrimental to the working of the mine, as generally all lodes are much richer in minerals in the vicinity of the breaks.

The lode disclosed in these workings is well defined, and has every appearance of continuing down to a great depth. I would suggest that in further sinking a larger sized shaft be made to enable two line of rails to be laid down for hauling material, which doubtless will be necessary as greater depth is attained.

Six samples taken from the different levels gave the following results:—

No. 1 gave 1oz. gold, 11ozs. 3dwts. silver to the ton—50ft. level.

No. 2 “ 2ozs. 3dwts. gold per ton—lode 2ft., 70 ft. level.

No. 3 “ 3ozs. 5dwts. gold per ton, 4ozs. 9dwts. silver per ton—lode 2ft., 70ft. level.

No. 4 “ 1oz. 17dwts. gold, 12dwts. silver per ton—lode 2ft. 6in., 70ft. level.

No. 5 “ 1oz. 8dwts. gold, 1oz. 10dwts. silver per ton—lode 2ft. 6in., 70ft. level.

No. 6 “ 7dwts. gold, 20ozs. 4dwts. silver (galena)—70ft. level.

(22-3-15.)

LIVELY'S CLAIM.—E. of and adjoining the E. boundary of the Thunder Queen Wadnaminga.

A large amount of systematic prospecting work has recently been done on this block with a view of discovering the continuation of the lode formation operated on in the Thunder Queen. Several trenches have been made in a N. and S. direction across the line of strike for lengths of 20ft. to 30ft. and to depths of from 2ft. to 4ft., and at one point a shaft has been sunk to a depth of 20ft. Farther E. about 2 chains a fair amount of trenching has been done, and one shaft sunk to a depth of 22ft., but so far only small veins of quartz have been exposed. The prospecting work should be extended farther S., as, judging from what can be seen in the limited workings done on the adjoining mine, the trend of the lode appears to run S. of Lively's workings. A sample taken of the vein material showing in the surface dumps gave 1dwt. of gold per ton. (22-3-15.)

Reefs about $\frac{3}{4}$ mile E. from the Virginia Gold Mine, Wadnaminga Goldfield.

There are a number of gold-bearing reefs showing on the surface, and in old prospecting holes examined some of the reefs traverse the ground in an E. and W. direction, others N. and S. at nearly right angles, and where the two line of lodes, junction there are generally fairly large outcrops showing.

At different points along the line of strike for about 40 chains several prospecting holes have been made in an E. and W. lode. These holes were evidently made some few years ago, as the pits are now full of debris. Near the top of the holes

a fairly defined reef is showing, consisting of ferruginous quartz, ironstone, and iron pyrites, 6in. to 12in. wide, carrying gold.

A sample taken of the reef near the top of No. 1 hole gave 15dwts. of gold per ton.

No. 2, 300yds. farther W., 19dwts. gold per ton.

No. 3, 2 chains farther W., 3dwts. gold per ton.

The prospects of this reef, as shown by the samples, are encouraging and fully justify further work being done to prove it at greater depth. (20-3-15.)

THE GOLDEN RECORD GOLD MINE (*vide* Record, p. 321, and Reviews Nos. 14, 15, 18, 19, 20, and 21), Wadnaminga.

The underlie shaft is down a total depth of 100ft., and a fair amount of driving and stoping done in the lode both E. and W. from the shaft. A large quantity of lode material has been extracted from the various workings of this mine, and at different levels some very rich specimens of gold-bearing stone were obtained.

Driving W. in the lode from two points in the underlie shaft is now in progress; a drive at the 80ft. level has been carried in 12ft., and one at 70ft. level, a total distance of 15ft. The lode disclosed in these workings is well defined, consisting of ferruginous quartz with pyrites, and a little galena, from 10in. to 13in. wide, carrying gold.

A sample of the lode in the face of the 80ft. drive gave a trace of gold.

A sample from the face of the 70ft. W. drive gave a trace of gold and silver. (22-3-15.)

MAJORIE COPPER MINE.—Situated on Outalpa Run, about 3 miles N.E. of Whey-Whey well, and 28 miles N.W. from Mannahill.

This property was recently pegged out, and a large amount of good prospecting work has been done, chiefly by open-cut workings 10ft. to 30ft. long and 6ft. to 18ft. deep. In the different openings are exposed what appear to be three parallel lode formations—strike N.W. by S.E., dip nearly vertical.

No. 1 *Workings*.—From a point on the side of a small hill an open-cut on the course of No. 1 formation has been carried in S.E. for a distance of 30ft. Near the centre of the cutting a small shaft has been formed and timbered and carried down to a depth of 28ft.; in these workings a lode formation is exposed 3ft. wide, consisting of ferruginous schist, manganese ore, and copper stains, with a vein of fairly high-grade copper ore on the hanging wall 3in. to 4in. wide. Three tons 4cwts. of ore extracted from this part of the workings gave a return of 17·8 per cent. copper per ton.

No. 2 *Workings*, situated 120ft. farther S.E., consist of an open-cut 20ft. long and 12ft. to 15ft. deep, in which is disclosed a fairly-defined formation, 24ft. W. from the first one, and bearing N. 20° W. with a very slight angle off the vertical to the E. Should this formation continue on its present course it will probably form a junction with No. 1 lode. The lode matrix here is schist and quartz, with copper ore, chiefly malachite.

No. 3 *Workings*, situated 96ft. farther S.E., consist of a hole 5ft. deep made in what appears to be No. 1 formation, composed of quartz and schist, containing seams 3in. to 4in. wide of malachite.

No. 4 *Workings*, 156ft. farther S.E., consisting of an open-cut 45ft. long by 16ft. deep, disclosing a lode formation 2ft. 6in. wide, with copper stains, and seams 4in. to 6in. wide of high percentage copper ore. On the hanging wall the body here is similar to that of No. 2 formation, and it appears quite probable that it is the continuation S.E. of the same ore channel.

No. 5 *Workings*, situated 60ft. W. from the last workings, and apparently in a separate make of ore from the other two. Along the line of strike an opening 10ft. long by 5ft. deep has been made, showing copper-stained material with thin seams

2in. to $\frac{1}{2}$ in. wide of malachite. About 15cwts. of fairly high-grade ore was obtained from these workings. Six samples taken of the veins showing in the different workings gave on assay the following results :—

	Copper.	Silver.
No. 1. From the bottom of shaft, 28ft. deep	Trace	.. 1oz. 4dwts.
No. 2. " the bottom of shaft, N.W. end	2.4%	.. Trace
No. 3. " No. 2 workings, 12ft. deep	8.5%	.. Trace
No. 4. " No. 3 workings, 5ft. deep, vein 4in.	17.3%	.. Trace
No. 5. " No. 4 workings, 16ft. deep, vein 6in.	21.1%	.. 1oz. 4dwts.
No. 6. Picked sample from dump of 4 tons	29.9%	.. 5oz. 4dwts.

In the present shallow workings, Nos. 1 and 2 formations are of a very promising nature and worth proving to greater depth by shaft-sinking on the underlie of the ore channel. (23-3-15.)

LOCALITY—EYRE PENINSULA

THE SUGARLOAF MINE.—Situated in the hundred of Campoona, about 22 miles N.W. from Cleve township.

The property comprises three blocks, 40 acres each, on which a fair amount of prospecting work has been done at different points by shaft-sinking.

The main workings are situated near the top of the hill, 150ft. above the plain, where two vertical shafts, 15ft. apart, have been sunk to depths of 63ft. and 80ft. respectively, the material disclosed consisting of ferruginous slate, decomposed rock, and graphite veins, bearing N. and S. and going down fairly vertically. At the bottom of the 80ft. shaft a drive E. has been extended 9ft., with a view of intersecting and proving the graphite veins at that level.

On the top of the hill a large outcrop of siliceous ironstone quartz and jasper opal occurs, bearing N. and S., which, along the surface, does not appear to contain any mineral of commercial value.

Down some short distance on the western slope of the hill a prospecting pit has been sunk 10ft. The material disclosed here is carbonaceous shale and dolomite, with copper stains in places. There is no indication in these workings of a lode formation, and I do not think that to continue sinking at this point is likely to be of any value.

About a mile and a half from the Sugarloaf Mine, in the hundred of Pascoe, some prospecting work was done a few years ago, and two shafts 40ft. apart were sunk to depths of 40ft. and 66ft. respectively. These shafts are now in a bad state and the underground workings could not be examined. The material extracted from the shafts and workings and stacked on surface consists mainly of carbonaceous shale and dolomite, containing a little malachite. Three samples taken from the dumps show on assay that the material operated on at this point is of low grade.

No. 1 sample gave 1.6 per cent. copper, No. 2 sample 1.6 per cent. copper, and No. 3 sample a trace only.

Seven samples taken from different parts of the *Sugarloaf Mine* gave the following results :—

No. 1. From dump on 63ft. shaft, 25.3 per cent. graphite and 0.1 per cent. copper.	
No. 2. " dump on 80ft. shaft, 15 per cent. graphite.	
No. 3. " dump on 80ft. shaft, nil.	
No. 4. " siliceous ironstone outcrop, nil.	
No. 5. " siliceous ironstone outcrop, nil.	
No. 6. " bottom 10ft. shaft, 0.2 per cent. copper.	
No. 7. " dump picked ore—one ton—11.8 per cent. copper.	

The development of this property is not of an encouraging nature, as, up to date, no defined ore channel has been discovered, the graphite formation appears promising and is worth a little further work done to test its value at the 80ft. level. (1-3-15.)

THE POONANA SILVER-LEAD AND COPPER MINE, section 68, hundred of Mann, about $2\frac{1}{2}$ miles N. from the township of Cleve.

Mr. Elson some few months ago found on the surface of this property several pieces of lode material containing rich silver-lead ore, which led him to prospect the ground with a view of discovering the main ore body, and the work done up to date has been very successful, as what appears to be a permanent ore channel is being disclosed.

The present workings are situated on the top of a hill 230ft. above the plain, and consist of open trenches and shallow pits made along the line of strike for a distance of 60ft., exposing a well-defined ore channel 2ft. to 2ft. 6in. wide of quartz and decomposed rock with good quality copper and silver-lead ore, chiefly malachite, azurite, copper glance, and cerussite.

At the S.E. end of the workings a pit has been sunk to a depth of 5ft. in the formation, which strikes N.W. and S.E., dipping at an angle of 65° to the S.W., the lode here is fully 2ft. wide, consisting of quartz and decomposed limestone intersected by seams 3in. to 9in. wide of silver-lead and copper ore of fairly high grade.

About 60ft. farther N.W. an underlie pit in the formation is down 7ft., the ore channel here is 2ft. 6in. wide, 18in. of which, near the footwall, contains seams and bunches of high-grade silver-lead ore with copper stains. In all these surface workings the lode is strong with well defined walls, and everything indicates that the ore channel is an extensive one, and likely to continue down.

The prospects of the present shallow surface workings are highly encouraging and fully justify the sinking of a fair-sized underlie shaft in the formation, say, 6ft. by 4ft. in the clear, which work I consider the best to carry out at present, as it would prove the value of ore downwards, and as depth is attained, drives on the course of the lode could be carried in at different levels to test the extent of the ore channel along the line of strike. Six samples of the lode material, taken from the different workings, gave on assay the following results:—

- No. 1. From a hole 5ft. deep, lode 2ft., gave 20.9 per cent. copper.
- No. 2. Picked ore, 31.6 per cent. copper, 11.1 per cent. lead, 2ozs. 2dwts. silver.
- No. 3. From hole 2ft. deep, copper nil, 52.9 per cent. lead, 1oz. 16dwts. silver.
- No. 4. From N.W. hole 7ft., 0.3 per cent. copper, 54.1 per cent. lead, 2ozs. 6dwts. silver.
- No. 5. From N.W. bottom, copper nil, 36.8 per cent. lead, 1oz. 12dwts. silver.
- No. 6. From S.E. end, 1.2 per cent. copper, 49.2 per cent. lead, 1oz. 6dwts. silver. (2-3-15.)

MILTALIE SILVER-LEAD MINE (*vide* Reviews Nos. 17 and 18).—Situated on section No. 5, in the hundred of Miltalie, 17 miles N.W. from Franklin Harbor.

There are three shafts on this property, the vertical shaft, the deepest, is down a total depth of 120ft. At 91ft. a plat has been made and a fair amount of driving done in the lode, which at that level proved to be much smaller than in the higher workings, where a considerable amount of stoping was done and the lode material taken out for a length of 60ft. along the line. and from it a large quantity of silver-lead ore extracted.

To prove this ore deposit at greater depth a series of diamond drill boreholes will be put down.

A site has been selected for No. 1 hole at a point on the dip of the lode W. 240ft. from the outcrop: the hole to go down at an angle of 20ft. in 100ft., which should intersect the lode at 200ft. from surface or 110ft. below present workings. No. 2 hole is marked out at 360ft. W. from outcrop to intersect lode at 300ft. (4-3-15.)

COWELL CONSOLIDATED SILVER-LEAD MINE (*vide* Reviews Nos. 17, 18, 19, 20, and 21).—Hundred of Miltalie, 18 miles from Franklin Harbor.

The main vertical shaft on the property is down a total depth of 101ft. from the surface. At that level a crosscut has been extended W. a total distance of 38ft.



Shell Limestone Flux Quarries, Point Turton, Y.P.

The country disclosed in the crosscut is compact and of a settled nature, consisting mainly of calcareous rock with small seams of quartz, and in the face a ferruginous schist formation 18in. wide has been intersected bearing N. and S in conformity with the bedding of the country rock, and having a slight angle off the vertical to the W., but it does not appear to carry any mineral of value at this level.

S. from the shaft at this level a fair amount of driving and rising has been done in the schist belt of country, but nothing of value was discovered.

At the 25ft. and 50ft. levels a large amount of good prospecting drives have been extended both ways in the shaft, and a considerable amount of work done up from the drives in the main break in the country which divides the limestone and schist. At some places in these workings small patches of ferruginous material were disclosed containing silver-lead and copper ore, but in no case did the ore extend to any distance either way. The development so far on this property has proved very discouraging, as nothing in the form of a defined lode has been discovered in any part of the workings. Five samples taken in bottom crosscut gave no value. (23-4-15.)

